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And *The Nation's Health*

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American Journal of Public Health
and THE NATION'S HEALTH

Volume 25 — October, 1935 — Number 10

Health Information on the Air*

ALAN BLANCHARD

Publicity Director, California Tuberculosis Association, San Francisco, Calif.

WITH millions of dollars invested; with millions pouring in, with world-wide broadcasts a frequent occurrence; with the growing threat of television; and with the complete capitulation of all the die-hards among advertisers, entertainers, and the public who held out against it; radio is having growing pains.

Ten thousand dollars an hour is what radio's sponsors pay out to entertain us during the 18 hours of the radio day. Sponsors last year paid over $72,000,000 for broadcasting time.

Radio has expanded so explosively that its actions appear somewhat insane. No one knows just where it is going—how big it will grow. Young executives sit in handsome offices, and though somewhat bewildered by it all, they perhaps know best radio's possibilities.

There are many contradictions to be found on the cost sheets of radio. Actors are eager to work for $10 or $15 a performance. Script writers will do a 15 minute play (remember that a stage play runs about 1 hour and 15 minutes) or even a 30 minute play for $25; but Eddie Cantor, Al Jolson, and Ed Wynn reputedly cannot work for less than $6,000 a performance.

One wide-spread program costs its sponsor but $22.50 for talent—that is for the organist—but Amos and Andy each get about $75,000 a year and, all in all, the sponsors spend about $160,000 a year to tell us about these two negroes—and of course tooth paste and mouth wash.

Half hour program costs may run from 0 to over $20,000, depending on the talent and the extent of the broadcasting chain.

Stations vary in impressiveness from enormous and magnificent New York studios of the large chains, to a back room off a small tradesman's shop. All of these stations have similar call letters, and on the air—what with the magic of high fidelity electrical transcriptions and modern receiving sets—it is sometimes difficult to distinguish between the big and the little stations by the quality of their programs. All these stations are trying to reach the public—you and me and the man on the street—and most of them are doing it very effectively. Newspapers claim that radio is taking away their circulation; and all of us know many people whose major contact with the world is

* Read at the Sixth Annual Meeting of the Western Branch, American Public Health Association in Helena, Mont., July 2, 1935, as part of the report of the Committee on Health Education Methods.

through the radio. It can be well imagined that there are a large number of people in this country whose only source of information, other than back fence gossip, is their radio receiving set.

It was this bewildering new medium for the spreading of information that your Committee on Health Education wished to examine with a view toward using it more effectively. Much has been said among educators in general about the need for governmental control of radio, in order that its social value might be enhanced by turning it over to educational work. Criticism has been directed against the monopolizing of radio by advertisers for big business. Health workers have claimed that the pseudo-health programs of advertisers fill the air and spread dangerous half-truths about hygiene and disease.

Every one of us, each with his own special message with which he would indoctrinate the masses, feels that at least a portion of the time on the air should be set aside for that purpose. We all forget that radio is in the unique position of being in the show business, while its revenues are derived from advertising. The public wants this new medium mainly for entertainment, and someone must pay the bill. The health worker may want to tell the world about the danger of communicable disease—in a dry-as-dust talk—but he, himself, listens only to "One Man's Family."

Your committee in approaching the problem of health education by radio wished to know the amount and nature of health information now being given on the air: the policies, and changing trends in policy, of the radio stations toward health broadcasts, both commercial and non-commercial or sustaining; in order that the committee might suggest a plan for health workers to follow for their greater and more effective use of radio.

Accordingly your committee conducted a survey of all radio stations in the San Francisco Bay Region, gathering information on the legislation related to radio and advertising, and other information touching on health broadcasting. The survey of the San Francisco Bay Region was chosen for its convenience, but it is believed that the findings apply with little variation to other regions in the West.

Two questionnaire forms were made up—the first listing all programs carried by a station, both commercial and non-commercial or sustaining, that touch in any way on health subjects. The second questionnaire listed questions on station policy in regard to health programs.

There are 12 commercial radio stations in the Bay Region. There are 2 National Broadcasting Company chain stations, 1 Columbia Broadcasting System chain station, 2 stations operating under the same management, one being in San Francisco, the other in San Jose, 2 newspaper stations, 1 being part of the Hearst chain, the other being run by the *Oakland Tribune*, 2 independent stations of important size, and 3 small independent stations.

The committee first tried to get from the National Association of Broadcasters in Washington, D. C., from the National Advisory Council on Radio in Education, and from other sources compilations showing the extent of health broadcasts in various regions of the country, but finding that such data have not been gathered, decided to get this information from the sample group of 12 stations mentioned.

The first questionnaire listed the following points related to the health broadcast programs:

1. The radio station
2. The name of the program
3. The name of the sponsor (or if the program is sustaining)
4. The days the program is broadcast

5. The time of day and the length of time the program is broadcast
6. The type of program (whether music and announcements, dramatic sketch and announcements, health talk, etc.)
7. The product or service advertised
8. The type of health information given
9. Comments on the quality of the health information given

This last point was the opinion of the committee and was filled out only for those programs with which the committee was familiar. The other information was supplied by the broadcasting station, and for each station covers the programs for 1 week.

The committee visited each station directly to obtain this information. With but one exception, the stations willingly supplied the information. In the case of the one station refusing (one of the independent stations of important size) an estimate of the programs was made from various newspaper listings, and the answers to the questionnaire on policy were deduced from the manager's statements.

One factor which, more than the station or the habit of the listeners, affects the distribution of the audience is the entertainment quality of the program. Advertising surveys have indicated that this factor is the most important of all; so in considering the programs that follow we can only hazard a guess—based on the hour of the day, the chain system, and other known factors—at the number of persons that the good and bad health programs are affecting.

The NBC stations are carrying 19 commercial programs that deal in some way with health subjects. Two of these are on the smaller station KGO, and the other 17 are carried on the larger station, KPO. All of these are entertainment programs—mostly variety shows, dramatic sketches, musical programs—though there is one cooking chat, and also one of comment on public affairs. None of these programs may be classed as "Health Talks." The health qualities of the product or service advertised are told in the announcements, which are usually short. A sample is the Pepsodent program "Amos 'n' Andy."

A number of these programs are given but once a week; many are given in series of 3 to 5. The air time amounts to 10 hours and 45 minutes a week on KPO, and 2 hours a week on KGO. This is out of a total air time on each station of 126 hours a week.

The value of air time varies with the time of day. It is known that the audience is small in the morning, steps up to a higher level during the afternoon, and steps up rapidly again during the evening from 5:30 to 10:30 P.M. Sunday afternoon compares with the peak evening time during the week.

The committee made a detailed analysis of the time allotted by each station to the various classes of health program which has been omitted on account of space.

On all the 12 Bay Region stations, a total of 44 hours and 45 minutes of commercial programs that touch on health subjects are carried. Health education programs are carried only on the important stations, and total 1 hour and 58 minutes a week in time.

At present no dangerous commercial health programs are known, and the few poor ones on the important stations are expected to be removed shortly.

The amount of time given health education seems very small, but this time is on important stations and is at good periods in the day. Irregularly these stations give more time to this subject. It should be remembered that health is only one phase of the educational work these stations are doing.

In considering the question of station policy, it was decided that a questionnaire covering many definite points, such as "Does the station take laxative advertising?" would not prove

satisfactory, since one exception would make the answer give an untrue picture of the station's policy. Therefore, a set of very general questions was prepared, the answers to be filled in at an interview with the station manager. The questions are:

Has the station any policy on the amount of air time given:
1. To health subjects?
2. To general education?
If so, does the policy apply to commercial programs?
Has the station any policy on the nature of health subjects which may be discussed?
Has the station any policy on the high level of the products advertised on commercial health programs?
Is the opinion of medical or health authority sought?
Has the station any policy on the high level of information given on commercial health programs?
Has the station any sustaining health programs, or non-commercial health programs? What sort?
Would the station be willing to give time on the air to a representative public health group, such as city or county health department, or branch of the American Public Health Association?
Would a minimum fee be requested?

The information given allows us to group the stations in 4 classes. We believe similar classifications could be made in other regions. Our classes are:

The chain stations: NBC and CBS
The newspaper stations: KYA and KLX
The large independents: KJBS, KQW, KROW, KSFO
The small stations: KRE, KLS, KGGC

The chain stations have the most definite plan for educational broadcasting. Both chains contribute time and some funds to educational programs. NBC has an educational division in San Francisco, with a full-time director who is engaged in forwarding and coördinating this work. NBC, in its health education work, prefers to deal with various health groups through some official and unassailable body, such as a university. It was pointed out that there is so much friction between different units in the health field—the physicians, health workers, chiropractors, religious cults, etc.—all of which the radio station must recognize and treat with equality, it is difficult for the station to work with any one group. However, were the Western Branch to represent a wide enough range of health activities, they would be more able to forward a program we might devise.

The newspaper stations are run with a policy similar to a newspaper, and would forward health programs having news interest. Their educational work, more sporadic than that of the chains, still is of definite value.

The independent stations have developed educational programs where there has been stimulation from educational groups. The scarcity of health education programs on these stations is a reflection on health workers.

The small stations are willing to coöperate with any community group, but prefer to hold to their general plan of records and spot announcements, rather than develop more elaborate programing.

In relation to commercial programs that touch on health, certain general checking on the product is done by all stations. The chains usually check with their national offices. The newspaper stations check with the advertising bureaus of the newspapers, and further check is made on the nature of the information to be given before the program is allowed on the station. The independents may be more or less careful, depending on the nature of the management. Where there has been coöperation with health and educational groups, there usually develops a higher consciousness of community obligation on the part of the management. The small stations get few advertising offers in this class, and usually

the small stations are connected with some church, or business organization—radio is a side line—and do little in the advertising field.

The general policy of all stations in relation to commercial health programs is founded on good taste, rather than on the careful picking of the product for its health values. CBS has recently issued an order that all programs for laxatives, deodorants, internal remedies, etc., carried on the chain be discontinued as soon as their contracts expire; and in the meantime is closely watching the advertising on such programs. NBC has long followed a similar policy, and most of the other stations are doing likewise. This policy was best expressed by the manager of one of the independent stations, who pointed out that the radio program goes into the "family circle," and is seldom heard by individuals alone. No objectionable subjects should be presented on the air. Although the stations are losing many immediately profitable contracts, they have found it better business to discontinue such programs.

Health workers may welcome this change that is bringing the removal from the air of all programs advertising internal remedies and like products, but they may not realize that this same trend means the removal of many of their own health programs on similar grounds. It is quite apparent—and many of the station managers pointed this out—that health programs dealing with pathologic conditions, discussing the details of disease, and of a morbid nature, are equally objectionable with such commercial health programs as mentioned. Your committee believes that certain channels should be used for disseminating various types of health information, and that radio is the channel for only a part of this information; and believes that health workers might best follow the example of advertisers when they prepare their radio programs. Radio health programs should deal with beauty, happiness, and the positive values of health, rather than with disease and the morbid aspects.

Another factor, other than the improvement of taste, which is improving the quality of commercial health programs, is the extension of legislation against such programs. Your committee corresponded with the Federal Communications Commission (which was the Federal Radio Commission) in Washington, D. C., and visited the San Francisco branch offices of the Federal Communications Commission, the Federal Trade Commission, and the Food and Drugs Administration; and learned the nature of this present and proposed legislation.

It was found that health workers have the legal weapon to force off the air any "quack" health program that can be shown to be dangerous to the public health. The Federal Communications Act, designed primarily to exert control over the engineering factors in the field of communications, also gives the Commission power to rule off the air stations carrying programs that are objectionable from a general public interest or public service standpoint. The Commission has no power to censor such programs in advance, but on the receipt of a sufficient number of complaints, or the complaint of any responsible group or official, may investigate them; and if the complaints seem warranted, conduct a hearing. If, in the Commission's judgment, the program is against the public interest, it may revoke the license of the radio station carrying the program.

To date, 5 stations in the United States have had their licenses revoked by the Commission. Three of these were penalized because of "quack" medical programs. One was for the notorious Dr. J. R. Brinkley's Goat Gland Treatment program, carried on

a station in Kansas, and later moved across the Mexican border. The other 2 advertised cancer "cures"; Norman Baker's program being carried by an Iowa station, the other by a station in Oregon.

At present the licenses of 5 stations in Los Angeles are awaiting the judgment of the Commission on a hearing conducted in relation to programs advertising a "Neurometer," a mechanical instrument designed to diagnose human ills. Also 21 stations, many of them prominent, will have to prove to the Commission on October 3 "that their continued operation will be in the public interest." The action was taken because the stations had broadcast advertisements of a reducing preparation, which the Commission held was inimical to the public health.

Radio stations are active in bringing to the Commission's attention programs of this sort asking for the Commission's opinion on a proposed program, or complaining of programs carried by other stations. As has been said, the Commission has no power to censor programs in advance. Radio stations complain of this ruling, saying that no standard is set up whereby they may determine the acceptability of a program; they have to take their chances, and risk citations on the renewal of their licenses. However, the Commission's ruling is working to inhibit the stations from accepting commercial health programs of a dangerous nature.

It should be understood that the Commission has power only to rule against programs that are proved to be definitely dangerous to the public health. Before seeking action by the Commission, health workers should make sure that the program of which they complain falls within that definition. The Commission is located in Washington, D. C. Branch offices in the West are in San Francisco, Los Angeles, Portland, Seattle, and Denver. Complaints against programs should be filed with the Commission through these offices. Electrical recordings and court reporter transcriptions of programs, properly certified, are used by the Commission when conducting hearings, and should be filed with complaints.

Another legal check on statements contained in radio advertising is found in the Federal Trade Commission Act. This Act, designed primarily to prevent unfair methods of competition in commerce, gives this Commission the power to proceed in respect thereof in the interests of the public. Deliberate misrepresentation and misleading advertising can be and has been stopped by this Commission. In a case under this law, the advertiser or manufacturer, not the radio station, would be held responsible for the statements made. As in the preceding case, complaint to the Commission will bring about an investigation. It should be understood that this law would only apply to exceptional cases in commercial health broadcasting. Any particular case should first be presented to one of the branch offices of the Commission in the West, located in San Francisco and Seattle.

The Food and Drugs Administration has control only over label and package advertising. The pending Copeland Bill will give the administration control over all advertising of foods and drugs, and will also bring under its control cosmetics and health appliances and curative devices of all descriptions. The features which caused such a storm of protest from radio, the press and manufacturers, have been amended. Group seizures of products have been ruled out except in the case of adulterated products. The clause holding the advertising medium, the radio or newspaper, responsible for the claims made, has been dropped, and the Bill pro-

poses to hold only the manufacturer and advertiser responsible. It is expected that the Bill as amended will pass Congress this session.

Your committee has attempted to find the best plan whereby we, as health workers, may work with the radio stations to use this medium for our purpose more effectively. We found that the radio workers know as little of the health field as health workers know of radio. They are concused by the many overlapping and paralleling organizations in the field of health. They are all anxious to aid the cause of health education, but may not show favoritism to any one group.

All the station managers stressed the need for organization of our educational activities, so that they might know a certain group was the accepted spokesman for the majority of the health agencies.

A survey of commercial radio advertising made by the Federal Communications Commission in 1932, indicates that educational institutions and groups do not make use of all the time that stations are willing to provide. At that time 95 per cent of all stations questioned said that this was true. Our survey indicates that this is still true. Every station but one was willing to give air time to a representative health group. The chain stations and others carrying sustaining health programs at present were willing to give more time to this subject, provided the subjects covered did not overlap their established programs. The other stations were quite willing to coöperate, provided the programs offered were of high interest value. The reason that so few stations have sustaining health education programs is that health workers have neglected to cultivate their assistance.

Your committee therefore believes:

That we must coördinate the educational work of all related health groups.

That we must study the material information offered by every health agency and group, and the publicity needs of each of these organizations.

That we must review this information with a view toward channeling through radio that which is suitable and proper to this medium.

That we must evaluate the proposed radio information and make proportionate allotments in our program planning for each field of health activity.

That we must devise a general program plan covering all radio stations and publicising all fields of health activity.

That as a unified group, which is the accepted spokesman for all health agencies, we must present our plan to the many radio stations and work out with them a general and widespread program of health education on the air, that will have regularity and permanence.

Your committee therefore recommends that with your adoption of the proposed permanent Committee on Health Education: you make provision for a permanent Sub-committee on Radio; that divisions of this committee be located in San Francisco, Los Angeles, Seattle, Portland, and Denver, and in other important radio centers, with representatives in each community with a radio station; that provision be made for the allotment of funds for this work, to cover costs for typing and printing radio scripts, preparing electrical transcription programs, etc.; and that provision be made for this committee to make use of funds allotted to health education by various health agencies coöperating in this radio health education plan.

Your committee also points to the need for you, as individuals representing various health agencies, to work whole-heartedly with the proposed Committee on Radio in order that we may gain the benefits our unity of action will bring in this field.

Both the NBC and the CBS chain representatives we interviewed stressed the need for a national committee to bring about nation-wide radio health

programs on the chains. If we are to make use of these two most important units in radio, national planning should be considered.

Your committee therefore suggests that the Western Branch recommend to the parent organization, the establishment of a National Committee on Radio, with the purpose of actively engaging in broadcasting on a nation-wide scale.

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The Vitamin Saga

Vitamin A keeps the cold germs away
And tends to make meek people nervy.
B's what you need when you're going to seed
And C is specific in scurvy.

Vitamin D keeps the bones in your knee
Tough and hard for the service on Sunday.
While E makes hens scratch and increase the hatch.
And brings in the profits on Monday.

Now Vitamin F never bothers the chef
'Cause this vitamin never existed.
G puts the fight in the old appetite
And you eat all the foods that are listed.

So now when you dine remember these lines
If long on this globe you would tarry.
Just try to be good and pick out more food
From the orchard, the garden, and dairy.

—R. Adams Dutcher, from *The Collecting Net*, Sept., 1935.

Basophilic Aggregation Test in the Lead Poisoning Epidemic of 1934-1935*

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THE automobile production year 1934–1935 marks the outstanding epidemic of lead poisoning in this country for at least the past decade. This epidemic appeared in the automobile industry, which industry has been substantially free from lead poisoning since the abandonment of the dry-sanding of wooden bodies painted with lead-containing paints. This preceding epidemic was described by Dean in 1924.[1] The present epidemic has prevailed among the several thousand workers engaged in automobile body manufacture.

Recent trends in body design have led to one-piece, all-metal bodies with non-air-resisting contours. The manufacturing processes entailed call for the filling in of all welding depressions and other indentations with a lead-tin alloy. This leads to the use of molten lead pots and torch work, which in turn are followed by various processes for the smoothing down of the leaded surfaces, including power grinding, hand filing, sanding, etc. As a result the atmosphere of these workrooms is polluted by harmful quantities of lead dust and lead fume. Occasionally as much as 1,100 mg. of lead have been encountered in 10 cu. m. of air, which amount of air approximates the quantity of air breathed by the average workman during the usual work day. However, the usual amount of lead in this quantity of air has ranged from 10 to 40 mg.

This type of lead exposure has brought about a high incidence of lead poisoning, together with the much larger groups of workers in whom proof of lead absorption has been established but who have not suffered subjective injury and have not lost time from employment. It is not possible to state the extent of lead poisoning during the past 12 months in the entire automobile industry. If the figures obtained from studies in a limited number of plants may be extended to the industry as a whole, it is possible that as many as 4,000 workmen have been injured to some extent during the 1934–1935 automobile production season. At best this figure is an approximation, and further it is emphasized that by no means does this number represent only actual clinical cases of lead poisoning.

During the past 10 years there have been many affirmations that industrial lead poisoning is a waning disease. While in some measure this has been true up until 1934, the outstanding fact is that it is the severity of the affection that is waning, rather than the frequency. Very strikingly this has been borne out by the present epidemic.

* To be read before the Industrial Hygiene Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 8, 1935.

As far as is known among the large number of cases, there have been no proved deaths, little profound encephalitis, very few instances of wrist drop or foot drop, etc. With certainty it may be believed that there have been milder degrees of neuromuscular injuries, encephalitis, etc. The outstanding and almost uniform manifestations have centered about involvement of the gastrointestinal tract, accompanied by excessive fatigability and blood changes.

Already the work conditions that produced this recent epidemic of lead poisoning have been modified in many plants to the extent that large numbers of additional cases of lead poisoning are unlikely. In some plants elaborate protective devices and procedures have been introduced. As yet no practical substitute has been found for the lead-tin alloy, inasmuch as certain other alloys that otherwise might be used may not be used due to prohibitive costs, undue shrinkage, etc. All in all, it may be stated that at least in some automobile plants the lead hazards have been brought under control.

This recent epidemic has provided us a long sought opportunity for the extended investigation of a diagnostic procedure first utilized by us in 1924.[2] Already a publication[3] has been made on this recent experience up to the time that 1,600 tests had been carried out. At this time the results of nearly 8,000 tests are available for the appraisal of the method. This test is based upon the enumeration of the total number of basophilic containing cells in the blood, in distinction to the widely used procedure of enumerating preformed stipple cells, the value of which method is now somewhat questioned. The method as carried out is similar to that lately used by Jones and his associates.[4] Since the basophilic formations as seen in the microscope do not exist as such in the blood stream and are artifactually produced in the process of preparation and staining, we prefer to use the term "Basophilic Aggregations," which term uniformly appears in the subsequent discussion of this test and our experience with it, which now follow.

BASIC PRINCIPLES

In normal adult human life, the content of erythrocytes in the blood stream is maintained on a fairly uniform level by the orderly entry of new cells from the bone marrow replacing those that have been destroyed.

These new cells are essentially mature, only about 1 per cent exhibiting any of the several known characteristics of immaturity. In bone marrow, during the formative period of erythrocytes, an entirely different cytology takes place varying with the stage of development of the red cells. Readily there may be demonstrated nuclei, protoplasm, and basophilic substance. In due time a change not known for any other cells of the body occurs; a chemical (hemoglobin) replaces the protoplasm and the nucleus is extruded. The erythrocyte is then ready for its chief function in the circulatory blood. These phenomena are set forth admirably in Key's[5] fundamental paper on erythrocytic cytology. The mechanism which liberates cells when mature and conversely retains undeveloped cells is not known. However, the functioning of such a mechanism is well established.

Under conditions in which toxic agents exert an action on bone marrow, and under other conditions in which physiologic demands are made, increased numbers of erythrocytes enter the blood stream. As examples of the former may be cited lead, benzol, toluol, xylol, possibly arsenic and chlorinated hydrocarbons, such as carbon tetrachloride; of the latter the effects of high altitudes constitute an obvious instance. The chief charac-

teristic of these liberated immature cells is the presence of basophilic substance.

Polychromasia (polychromatophilia), punctate stippling, and reticulation are but different manifestations of one phenomenon—the presence of basophilic substance. The exact form of this basophilic substance existing in the unaltered blood is little known. Probably the picture observed as polychromasia after staining is nearest to the natural state of this material. The impression furnished by all available evidence is that of thousands of ultramicroscopic particles in acid suspension, or possibly in their innate form in acid solution. Reticulated cells probably are produced only as a result of laboratory manipulation and thus while not being true artifacts are laboratory creations. With suitable laboratory facilities one is able to observe through the microscope the actual formation of reticular processes in cells not previously exhibiting such reticulation. Through variations in laboratory technic, the experimenter may produce at will in a single blood smear all the well known varieties of reticulation, as fragmented, anastomosing, wreaths, mossy forms, etc. If the artificiality of reticulation be accepted as fact, then such terms as "reticulocytosis" conceivably may be regarded as anomalous, in so far as these terms betoken the existence of reticular forms in the circulating blood. However, stippled cells are believed to exist as such in the unaltered blood. Through unknown processes, the ultramicroscopic particles observed as polychromasia or the basophilic materials in acid solutions, are caused to arrange themselves into masses characteristic of stippling. From the literature these concepts are well borne out in substantial publications, brief excerpts from which are now recorded.

Key[5] notes:

> If an individual reticulated cell be watched carefully during the process of staining, the net can be seen to grow under the eye of the observer as though it were being formed by precipitation of the substance from the surrounding medium.
>
> It is difficult to conceive that fixatives cause a definite network to break up into ultramicroscopic particles and become uniformly distributed through the cell (*i.e.*, polychromatophilia). Fixatives tend to fix intracellular products *in situ*. It is consequently felt that the conclusion is warranted that the reticular network as seen in supravitally stained erythrocytes is formed only during the process of staining and that no such structure exists in the unaltered erythrocyte.
>
> My observations lead to the belief that the granules of punctate basophilia are formed of the same basophilic substance which in simple anemias gives pictures of polychromatophilia and that because of the pathologic process the substance is aggregated into small granules in the cell [punctate stippling].
>
> With Wright's stain allowed to dry on a slide to which salt solution and blood is added, no polychromatophilia is seen but a definite basophilic reticulation slowly appears in the basophilic erythrocytes.
>
> Basophilic substance (*i.e.*, as a term) is preferable to "reticular substance" since reticulations are artifacts due to the action of a stain on a substance distributed uniformly through the cell.

In Hawes's[6] work no distinction was made between polychromatophilia and stippling, but when total percentages of the two were added the results corresponded with fair constancy with the total percentage of reticulated cells enumerated by other means on the same blood. Such differences as were encountered were attributed to differences in the delicacy of the methods used and not to any true excess of reticulated cells.

Jones[4] observes: "This (basophilic) substance is demonstrated either in the form of polychromatophilia, punctate basophilia, or reticular designs, depending upon the staining method used."

Basophilic substance long has been regarded as the foremost blood finding in lead poisoning, but to an overwhelming extent reliance has been

placed upon the determination of stippled cells. Recognition that polychromatophilia, punctate stippling and reticulation are but different aspects of the same material, should prompt the placement of greater diagnostic dependence upon examinations for the totality of erythrocytes containing basophilic material. Of the three forms of basophilic substance, stippled cells are the least common. The positive diagnostic significance widely attached to the qualitative finding of stippled cells in suspected lead poisoning is becoming more and more questionable; conversely less uncertainty is believed to attend the quantitative determination of all basophilic erythrocytes.

TECHNICAL PROCEDURE

The blood of normal human adults rarely contains more than 1 per cent of basophilic erythrocytes. The average in our experience lies between 0.4 and 0.8 per cent. With workers absorbing lead without clinical manifestations and in early lead poisoning, the percentage commonly ranges from 1.5 to 4.0 per cent, with occasional findings up to 20.0 per cent. The zone between 1.0 and 1.5 per cent represents the threshold, findings within which being open to doubt. In the absence of other pathology, any finding in lead exposed workers of, or in excess of, 1.5 per cent at once suggests the probability of lead absorption. Findings in excess of 2.0 or 3.0 per cent are to be associated with an increased imminence of clinical lead poisoning.

Search for these basophilic forms is best made in laked cells. When laking takes place some of the basophilic substance probably leaves the cell with the hemoglobin. The remainder, being insoluble in water, salines, and some stains, collects in masses, strands, and reticula, as laboratory artifacts. Such forms are far more visible than polychromatophilic cells and are more numerous than stippled cells.

In our first work [2] a thick, even blood smear was entirely laked. The number of basophilic aggregations in an average of many uniform microscopic fields was interpreted in relation to our clinical observations of the persons examined either as controls or as leaded patients. This procedure justly has been criticized as not readily transferable to others for quantitative work, since the making of uniformly thick smears by divers persons is most unlikely. Under rigid research conditions this earlier method will yield quantitative results but now is not the preferred procedure. The technic now employed is here presented:

The Sussmann-Weindel stain advocated by Jones is quite satisfactory when its several ingredients are pure. The formula is as follows:

Toluidine blue	0.5 gm.
Borax	0.05 gm.
Methylene blue solution (Loeffler's)	5 c.c.
Distilled water	100 c.c.

Our experience with this stain has been that it is not uniform from one batch to the next. Most of the trouble may be traced to the toluidine blue. Of six samples of this dye recently purchased by us from various supply houses, only one was found to be satisfactory.

A modified Manson's methylene blue yields more consistent results. The formula is as follows:

Borax	1.0 gm.
Methylene blue	2.0 gm.
Distilled water (boiling)	100 c.c.

The borax is dissolved in the boiling distilled water and to this is added the methylene blue. After filtering, this stain is ready for use and provides a stable, satisfactory, and uniform stain for at least 2 weeks. If used for long periods, a progressive formation of

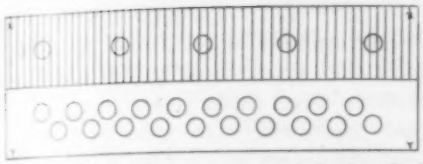

FIGURE I. Schematic arrangement indicating fixed (x, x) and unfixed (y, y) portions of slide, together with counting procedure on uniform slide.

precipitate may appear. However, due to the low cost and ease with which this stain is prepared, we consider this a small handicap. This stain is less stable than the Sussmann-Weindel, but in our experience gives more trustworthy results.

Thin, even blood smears are made on slides and allowed to dry. The proper drying of these smears becomes important. If permitted to become excessively dry, that is, longer than 12 hours, some of the basophilic containing cells will not lend themselves to aggregation of their basophilic material. On the other hand, insufficient drying facilitates removal of cells during the staining period. Ordinarily the optimum time lies between 1 and 3 hours. Under peculiar industrial conditions, involving high temperatures and low humidity, or conversely high humidity, special consideration for the drying period may be required.

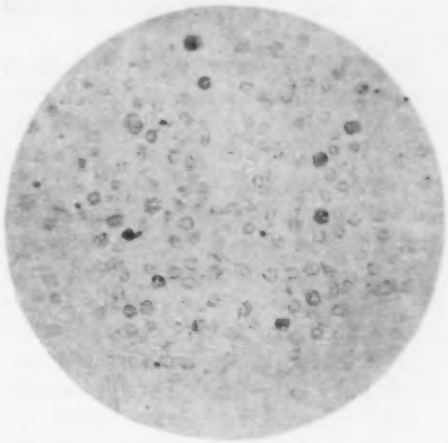

FIGURE III. Typical microscopic field from fixed portion of same slide as in Figure II, presenting unlaked, stained red blood cells. Lines of Whipple grid used as guide in counting may be seen.

After drying, one-half of the slide is overlaid by a strip of filter paper, as set forth by Jones, and cautiously there is applied with a pipette or dropper the minimum amount of methyl alcohol C. P. (methanol, wood alcohol) required to moisten the filter paper until it clings to the slide. This is allowed

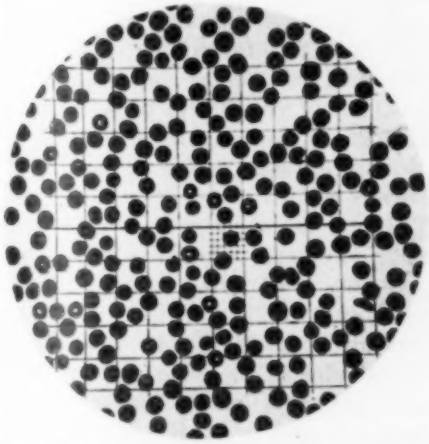

FIGURE II. Typical microscopic field from unfixed laked portion of slide presenting numerous basophilic aggregations.

FIGURE IV. Semi-schematic drawing of a basophilic aggregation in laked red blood cell. Manson stain. Magnification in original drawing: 17,000.

to dry until the filter paper becomes loose.

The slide is now submersed in a Coplin staining jar, containing the Manson stain, for approximately 10 minutes. The time is of minor importance since a readable stain may be had in 2 minutes, and on the other extreme it is impossible to overstain. After staining, it is necessary to wash the slides through 3 or 4 rinses of distilled water. In some cities tap water may be safely used for this purpose. Air drying of the slides is recommended.

The microscopic arrangements as used by us provide an oil immersion objective and a 10X ocular, which is fitted with a Whipple grid. The outer lines of this grid determine our microscopic field (Figure III). The average field in a good preparation contains approximately 150 red blood cells. Before counting, the slide should be examined for an area showing suitable distribution of the red cells. In the unfixed portion of the slide, customarily 10 consecutive fields in two parallel rows are counted, making a total of 20 fields, but in the more evenly distributed slide 20 consecutive fields. Then moving to the fixed portion of the slide, 5 appropriately corresponding fields are counted (Figure I). The basophilic aggregations are then expressed as a percentage of the latter.

Thus, if in the 20 fields counted in the unfixed portion of the slide there were found 76 B.A.s (Basophilic Aggregations), and if in the 5 fields of the fixed portion 1,000 red blood cells (or 4,000 in 20 fields), the obvious percentage is 1.9.

The physical features of the B.A.s are best presented in the accompanying photographs and photomicrographs (Figures II, IV). The color of the cells varies with the stain employed. A clear, brilliant blue is obtained with the Manson stain. A hand tally is used in the enumeration of the cells.

RECENT RESULTS

During 1934 and the first two-thirds of 1935, approximately 8,000 examinations were made, using the technic just described. The examinees represent employees in 16 plants and 6 different industries. Included in the 8,000 tests made are several hundred controls usually obtained from office groups. The lead exposed workers were distributed over the following industries: lead pigment manufacture, paint and other coatings manufacture, soldering, lead casting, lead oxide manufacture and application, and lead smelting. In some plants, but not all, concurrent determinations were made as to the amount of lead in the atmosphere expressed in terms of mgs. of lead per 10 cu. m. of air. In the aggregate, 416 quantitative lead determinations were made. The results from the basophilic aggregation tests have been correlated with the findings of the quantity of lead in the atmosphere breathed by exposed workers.

During 1934, basophilic aggregation tests were carried out simultaneously with stipple cell determinations, and in some instances with hemoglobin measurements and total red cell counts. Very early it was established that no consistent correlation was present. In many persons wholly unexposed to lead an occasional stipple cell was encountered and among lead workers approximately 90 per cent presented large numbers of stipple cells in the absence of clinical lead poisoning, and often after 3 months of no exposure to lead. The number of stipple cells in lead-using workers without clinical lead poisoning ordinarily was lower than 3,000 per million. The qualitative demonstration of stipple cells proved of no value in the diagnosis of clinical lead poisoning or in the making of decisions as to acceptability of men for continued work. Many workers regularly exhibiting stipple cells in

their blood smears passed through the entire automobile production season without illness and without any lost time. In similar fashion it was found that no significant diagnostic values resided in the routine determination of hemoglobin percentages or in total red cell counts. Over and over high percentages of basophilic aggregations were detected with no significant changes either in the hemoglobin or in the erythrocyte counts. For this reason all blood work other than the basophilic aggregation tests was abandoned as routine procedure in plant surveys, although complete blood work was carried out in the management of clinical cases of lead poisoning.

The trend of findings from 8,000 basophilic aggregation tests are now shown in three specimen tables.

Table I comprises the results from 25 representative controls. In establishing normal ranges of basophilic cells only such persons were utilized as were known to be essentially unexposed to lead and definitely unexposed in industrial pursuits. Almost without exception control examinees present less than 1 per cent of basophilic containing cells.

TABLE I

Initials	*Per Cent Basophilic Cells*
R. T.	0.4
E. T.	0.7
J. J.	0.4
L. H.	0.9
G. O.	0.5
S. M.	0.3
K. F.	0.6
R. H.	0.3
H. D.	0.9
M. G.	0.4
G. C.	0.5
O. L.	0.4
W. F.	0.2
J. B.	0.7
F. W.	0.4
H. K.	0.6
W. B.	0.2
J. R.	0.3
H. F.	0.7
W. K.	0.5
E. S.	0.3
C. W.	0.6
R. B.	0.3
L. K.	0.6
C. V.	0.4

TABLE II

Initials	*Age*	*Per Cent Basophilic Cells*	*Length of Time on Present Job*
C. S.	41	2.1	14 years
V. D.	37	1.2	8 years
J. M.	48	1.4	6 years
T. K.	34	3.5	9 years
J. K.	46	1.1	7 years
G. F.	41	3.2	1 year
A. S.	47	3.1	4 months
D. T.	55	2.3	6 years
G. B.	37	0.4	2 years
G. K.	30	1.5	10 months
T. M.	35	5.5	2 months
K. W.	29	1.6	5 years
E. C.	53	0.7	3 years
S. P.	30	2.0	5 years
V. T.	38	1.6	4 months
A. C.	36	3.3	1 month
F. N.	45	1.7	8 years
S. H.	28	1.4	3 years
J. G.	33	2.5	6 years
J. C.	32	0.5	2 years
C. C.	27	1.4	3 years
F. L.	40	2.4	4 years
J. S.	33	2.5	6 years
L. K.	47	1.9	4 years
C. R.	50	1.3	21 years

In Table II may be found the results of 25 workers in an atmosphere containing lead to the extent of 14 mgs. per 10 cu. m. of air. In contrast to the control table just preceding, a fair number of these examinees present findings above 1.5 per cent. It is among workers having such findings as these that clinical cases of lead poisoning may be expected to arise. Almost uniformly it has been noted that the higher the lead content of the atmosphere the higher the percentage of exposed workers showing positive basophilic aggregation findings. On the other hand it has not been found that the percentage of basophilic cells increases with any uniformity in keeping with increases in the lead content of the atmosphere. An occasional worker may yield as high a figure as 10 or 15 per cent of B.A.s but this is not the rule and the majority of affected

workers regardless of the amount of the exposure will present positive findings in the range of from 2 to 6 per cent.

With the procurement of better work conditions, as reflected by lowered quantities of lead in the atmosphere, there occurs a corresponding diminution in the number of persons showing positive tests, although there is a lag of from 1 to 2 weeks before this drop may be demonstrated. This correlation between lead in the atmosphere and positive blood smears is reflected in Table III.

TABLE III

BASOPHILIC AGGREGATION TEST RESULTS ON WORKMEN BEFORE AND AFTER THE LEAD CONCENTRATION WAS REDUCED FROM 75 MG. PER 10 CU. M. OF AIR TO 4 MG. PER 10 CU. M. OF AIR. ELAPSED TIME: 35 DAYS.

Initials	*Per Cent B. A. Cells When 10 cu. m. of Air Contained 75 mg. of Lead*	*Per Cent B. A. Cells When 10 cu. m. of Air Contained 4 mg. of Lead*
M. V.	2.0	0.8
T. S.	2.1	0.7
A. L.	2.0	1.0
J. B.	3.2	4.6
W. H.	2.0	0.9
C. H.	3.4	1.4
J. T.	2.1	0.6
K. S.	2.7	2.0
C. S.	4.3	3.4
C. M.	2.6	1.6
V. K.	2.4	0.5
M. S.	3.0	0.9
C. G.	2.0	0.8
C. B.	2.0	1.0
J. E.	2.0	1.7
D. D.	2.5	2.2
D. T.	2.2	3.2
W. W.	1.1	4.0
J. K.	3.2	1.3
G. R.	3.0	0.8
G. C.	2.0	0.5
J. P.	2.1	1.6
A. R.	2.0	0.8
I. L.	3.1	2.4
P. P.	8.5	5.3

This specimen material is characteristic of the entire investigation, with one exception. In one plant, manufacturing a great variety of pigment materials, lead poisoning was known to be present but the basophilic aggregation tests were not found to be in keeping with our general experience. The assumption is that because of the multiplicity of chemicals manipulated some biological antagonistic factor interfered with the usual reaction of the embryonic red cell to lead.

The chief application of this test has been in the routine examination of large groups of lead exposed workers. The results of such tests have been utilized as a guide for the transfer of workers to less hazardous departments, in the appraisal of the degree of exposure in different departments, in determining the effect of preventive measures, and in the differential diagnosis between lead poisoning and conditions simulating this disease, but in routine work its greatest single value has been associated with the detection of malingerers. During this epidemic in some plants, as high as 90 per cent of all exposed workers have simulated lead poisoning presumably in order to be eligible for insurance and sick benefits during the nonproductive season in the automobile industry. In some instances this basophilic aggregation test has been accepted as a sufficient criterion for the weeding out of these malingerers.

GENERAL COMMENT

In persons exposed to lead, otherwise free from disease, the detection of basophilic containing red cells in percentages in excess of 1.5, and particularly in excess of 2 per cent, suggests lead absorption and the possibility of approaching clinical lead poisoning.

Inconclusive proof is available that this test may be positive after exposure to other substances such as benzol, toluol, xylol, arsenic, etc. Occasionally in infectious diseases numbers of basophilic aggregations above the usual may be found. Manifestly in anemias and other types of diseases involving the red blood cells, normal ranges may be exceeded.

The length of exposure to lead ap-

pears to have no significant bearing upon the basophilic aggregation findings. Two weeks' exposure is ample to bring about increased numbers of basophilic containing red cells. New workers employed alongside of workers employed for a longer period are prone to show a greater frequency of response than the older workers.

In prolonged chronic lead poisoning the test described appears to be of limited value. The recession in the number of basophilic aggregations may be definite in long existing lead poisoning even in the presence of frank manifestations. Under such conditions punctate stippling may persist.

In many publications the minimum amount of lead that may lead to lead poisoning is specified as from 1 to 2 mg. as a daily intake. While this figure may represent a primary threshold at which an occasional case of lead poisoning may arise, it is our experience that many hundreds of workers continue at employment in concentrations much higher without demonstrable impairment. Without denying the possibility that a daily intake of 1.5 mg. of lead may produce lead poisoning, the belief is expressed that the practical threshold may be considerably higher and in the general range of from 4 to 8 mg. At least, years of exposure to such concentrations have not led to a single recognized case of plumbism in several plants included in this investigation.

One of the practical advantages served by this test as described lies in the fact that large numbers of persons may be examined daily. In our experience, a single worker has been able to collect as many as 300 specimens per day. Laking, staining, and cell counting, subsequently carried out, necessarily must be at a slower rate, but on a single day, as many as 70 counts have been made by one experienced technician. This rate of work stands in contrast to stipple cell enumeration, which if properly carried out ordinarily yields not more than 20 determinations daily.

SUMMARY

In the 1934–1935 epidemic of lead poisoning in the automobile industry, 6,900 basophilic aggregation examinations of the blood were made. In addition during this period 1,100 tests were made in other industries, thereby totalling 8,000 tests during the investigation. This number includes approximately 500 control examinations made upon workers unexposed to lead.

Positive basophilic aggregation tests, the method for which is described in detail, have served as an index for lead absorption prior to the appearance of clinical manifestations of lead poisoning. This test has proved to be of value in the diagnosis of early cases of lead poisoning. An approach to this test was described by us in 1924. Through technical improvements, made by others and by us, this procedure is now suited to application by any physician or laboratory carrying out any blood examinations.

The basic principle in the basophilic aggregation test is the enumeration of red blood cells containing basophilic substance, in contrast to the customary procedure of qualitative or quantitative examination for stipple or polychromatophilic cells.

The native state of basophilic material in unaltered red blood cells is not known, but in the process of laking and staining red cells this substance may be artificially aggregated into readily visible masses. In normal human adults, these aggregates rarely exceed 1 per cent of the total number of erythrocytes, but in lead exposed individuals the percentages ordinarily lie above this normal maximum, when considerable lead is being absorbed or when clinical lead poisoning is im-

minent. Findings of percentages above 1 to 1.5 per cent and especially above 2 per cent in persons exposed to lead at once suggest lead absorption and the possibility of approaching lead poisoning, or the actuality of early lead poisoning.

In chronic lead poisoning this test usually is not, but may be, positive. As lead poisoning progresses to extended chronicity, the reliability of the procedure diminishes. This test has been utilized in lead-using industries to determine the number of exposed workers absorbing lead, as some proof of existing lead hazards, as a guide for the transfer of lead absorbing workers to lead-free departments, as a measure of the efficacy of preventive devices and practices, and as a means for the detection of malingerers.

There are varied types of diseases leading to positive basophilic aggregation tests, but in groups of workers in lead industries, presumably normal except for the possible effects of lead exposures, the positive basophilic aggregation test stands in some relation to lead absorption and its subsequent action.

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Anthrax from Infected Shaving Brushes

THREE years ago a consignment of 12 shaving brushes came into Lambeth (a district of South London) and found to be infected with anthrax. The health officer seized 11, but the 12th had been sold and could not be traced. Every one of the 11 was found to be infected with anthrax. The brushes had apparently come from Germany and were sold wholesale at the rate of 6 for 30 cents. The ministry of health issued a warning concerning the brushes to the hospitals and newspapers in the neighborhood. At last the brush has been found, but unfortunately as the result of a fatality. At an inquest on a boot repairer, who died in the neighboring district of Brixton, the pathologist stated that death was due to anthrax and that the brush was freely infected with the bacilli and spores of anthrax. The health officer gave evidence that a man might use an infected shaving brush every day for 2 years with impunity until he cut himself and became infected. The coroner remarked that the only satisfactory feature about the case was the vigilance exerted by the health authorities.—London Letter, *J.A.M.A.*, Aug. 10, 1935.

Relationship Between Electrophoretic Migration Velocities, the Virulence and the Types of the Diphtheria and Diphtheria-like Bacilli

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THESE studies were made to ascertain whether the electrophoretic migration velocity measurements made on microörganisms grown on Löffler's medium for 24 hours might be of value in routine work for determining the virulence of the diphtheria and diphtheria-like-bacilli.

METHOD

The diphtheria strains used were obtained from the collection of the Bureau of Bacteriology of the Maryland State Department of Health through the courtesy of C. A. Perry. The virulence determinations and the typing were made by C. A. Perry (work not published). For the virulence determinations the intracutaneous guinea pig method was employed, while types were determined by colony morphology and carbohydrate reactions. The electrophoretic migration velocity measurements were completed before information as to virulence and type was obtained.

The bacteria were grown for 20 to 24 hours on Löffler's medium, pH 7 to 7.4. The surface growth was removed by washing with distilled water, pH 7. The bacterial cells of this suspension were washed three times. After the last washing the suspension was homogenized by shaking for 2 minutes with glass beads and filtered through a thin layer of cotton. The electrophoretic measurements were made within 24 hours after the suspension was prepared. Dozois and coworkers (1935) have shown that the bacterial suspensions may be kept as long as 48 hours at 5° C. without a measurable alteration of the zeta potential.

Measurements of the electrophoretic migration velocity—The Kunitz modification of the Northrop-Kunitz Microcataphoresis Cell (1928) was used with a Bausch and Lomb 8 mm., 0.50 n.a. 21X objective, a 10X eye-piece and a micro lamp. After the cataphoresis cell had been filled with the suspension the current was applied for 6 minutes before readings were made. This is sufficient time for the microörganisms to reach a maximum velocity. Twenty readings were made at the two stationary levels, *i.e.*, 0.21 and 0.79 of the inside depth of the cell. An applied potential of 118 volts was used; this voltage gave a potential drop through the cell of 2.5 volts. The results are expressed in terms of 0.05 mm. per time (in seconds) with 118 D.C. volts.

It was not found necessary to con-

vert these results into velocities in microns per second, for the velocities are not constant and depend on various factors of technic. The velocities per unit of time do not represent a basis for comparing these results with those of other workers. Comparisons of the electrophoretic measurements were made with the results of the virulence tests. The results of our observations are comprised in Table I.

DISCUSSION

As shown in Table I, from the standpoint of velocity, 3 zones may be differentiated. The smallest zone (the diphtheroid zone) ranging from 6.51 to 7 seconds includes the more rapidly traveling diphtheroids; the largest zone (the virulent zone), from 7.01 to 9 seconds, comprised the greater part of the virulent diphtheria strains with the medium velocity. The 3rd zone (the avirulent zone) which comprises most of the avirulent strains with the slowest velocity, ranges from 9.01 to 10.50 seconds. The lines between the zones cannot be sharply drawn.

The virulent and avirulent zones are divided into velocity classes. In class 1 are those microörganisms with a velocity between 7.01 and 7.50 seconds, in class 2, those with a velocity between 7.51 and 8.00 seconds, and so on through the 7 classes. The borderline between the virulent and avirulent zone falls between classes 4 and 5. Strains in the velocity classes near the border of the zones often cross that line. Two virulent strains are in class 5, and 3 avirulent strains are in class 4. On the other extreme toward the diphtheroid zone the same phenomenon may be seen. Five diphtheroid strains are found in class 1. The virulent diphtheria strains do not appear in the zone of the diphtheroids.

The 2 virulent strains which appear in the avirulent zone, 3 avirulent strains in the virulent zone, and the 5 diphtheroid strains in the virulent zone would have led to incorrect observa-

TABLE I

TABULATION OF THE ELECTROPHORETIC VELOCITIES OF STRAINS STUDIED

		Diphtheroid Zone	Virulent Zone				Avirulent Zone			
		Seconds per 0.05 mm.								
Types		6:51-7:00	7:01-7:50 Class 1	7:51-8:00 Class 2	8:01-8:50 Class 3	8:51-9:00 Class 4	9:01-9:50 Class 5	9:51-10:00 Class 6	10:01-10:50 Class 7	Total
Diphtheria	Gravis	0	5	2	3	3 (Avirul)	1 (Virul)	0	1	15
	Intermediate	0	5	0	5	8 (Avirul)	2	1	0	15
	Mitis	0	2	4	10	2 (Avirul)	1 (Virul)	1	4	24
	Total	0	12	6	18	13	4	2	5	60
Diphtheroids	Hofmanni	2	3							
	Xerosis	3	2							
	Total	5	5							10
Grand Total		5	17	6	18	13	4	2	5	70

tions as to virulence had not the fermentation and intracutaneous tests been made. These above strains represent an error of 14 per cent, which is, doubtlessly, a greater error than that found by the intracutaneous test. This error is 3½ times greater than that published by Jensen, Falk, Tonney, and White (1928), and approaches the results of Stone and Weigel (1929). The latter have found that there is not a sharp line between the virulent and avirulent strains and that there is also an interchange between them. Randall and Thompson (1931) have arrived at the conclusion that because there is no sharply marked line of distinction between the velocities of the virulent and avirulent strains electrophoretic methods of virulence determinations cannot be used in their present forms as a routine method.

A total of 70 strains were studied which represent all of the known diphtheria bacilli as well as the most common diphtheroids. As shown in the table, about half of the virulent strains appear in the velocity class near the borderline which separates the virulent and avirulent organisms. The velocity distribution is sufficiently reliable to assume that at least 50 per cent of the strains of every series would belong to the borderline classes. Although the error found is but 14 per cent, in light of our experience, it may be as great as 50 per cent in other series.

There is another indication that the electrophoretic velocity method is not sufficiently advanced for routine work. Although Falk and his coworkers, and Randall and Thompson report that the avirulent strains migrate more rapidly than do the virulent, our findings are in accord with those of Stone and Weigel that the virulent strains migrate more rapidly than do the avirulent. These differences indicate that the potential difference of the bacteria depends on many and only partly known factors. Falk, etc., and Randall, etc., used 48 hour old broth cultures for their determinations. Stone and Weigel have unfortunately not stated the medium they used. It is possible that the results we obtained were due to the fact that we used a solid medium (Löffler's medium) on which to grow the bacteria. It may be supposed that the electrophoretic velocity is not a constant feature of the bacteria, but depends upon factors of technic and environment. Although working under the same apparent conditions, a slight unavoidable change in technic might cause an alteration in the measured electrophoretic velocity.

As shown in the table, within each zone there is a certain tendency of the velocities toward the extremes. The gravis type apparently tends toward the extreme of the virulent zone, and the intermediate and the mitis types toward the avirulent zone. This trend suggests that the electrophoretic velocity of the diphtheria strains should be in accord with their virulence and the shift toward one or the other extreme should indicate the degree of their virulence. On the basis of this an attempt was made to determine, by means of the measured electrophoretic velocity, the variation of the virulence inside the three types (gravis, mitis, and intermediate) described by Anderson, Happold, and McLeod (1931). The errors in the electrophoretic velocity method were detected by studies of the intracutaneous tests.

In order to determine the variation of the virulence and the differences within each type, as well as the standard deviations and their differences, the mathematical mean of the electrophoretic migration velocity was calculated. The following are the results of these calculations:

1. Mean velocity of the gravis type (and its probable error) 7.94 ± 0.124 seconds
2. Mean velocity of the intermediate type

(and its probable error) 8.16 ± 0.151 seconds

3. Mean velocity of the mitis type (and its probable error) 8.11 ± 0.107 seconds

These figures indicate that the mean velocity of the gravis type is shifted toward the virulent zone; that of the intermediate type toward the avirulent zone, and that of the mitis type lies between the two. In other words, the gravis type would contain more strains with a higher degree of virulence than does the intermediate or the mitis type. These differences are, however, only apparent. "The significance test" shows the difference between the means was not significant (the difference between the gravis and intermediate $0.92\,\sigma$, between the gravis and mitis $0.65\,\sigma$, and between the intermediate and mitis $0.22\,\sigma$). The even scatter of the strains as to their virulence distribution (migration velocity) was also ascertained by calculating the standard deviations of the type (standard deviation in order above; 1.33, 1.25, 1.35; differences $0.53\,\sigma$, $0.18\,\sigma$, $0.78\,\sigma$). These calculations permit us to assume that if the velocity represents a degree of the virulence, the diphtheria strains studied show a corresponding virulence regardless of the type. Because our sample is small in regard to type distribution it does not permit us to draw final conclusions.

The distribution of the avirulent strains into types by means of colony characteristics and carbohydrate reactions offer figures of interest: 25 per cent of the avirulent strains belong to the mitis type, 19.05 per cent to the intermediate, and 13.33 per cent to the gravis type. These figures offer further evidence for assuming the possibility of the variation of the virulence inside the diphtheria types.

SUMMARY

1. Electrophoretic measurements were made on 60 diphtheria and 10 diphtheroid strains, grown on Löffler's medium.

2. The diphtheroid strains showed the greatest velocity, the avirulent strains the least and the virulent strains represented a medium velocity between the two.

3. The borderline between the zones (diphtheroid, avirulent and virulent diphtheria) may not be sharply drawn because of the interchange of the strains located in the velocity classes in the vicinity of the borders.

4. Our determinations showed a 14 per cent error as compared to the virulence test carried out on guinea pigs.

5. Because of the errors, the electrophoretic method in its present form, cannot be used in routine work.

6. The variation of the virulence within the 3 diphtheria types was not demonstrable.

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Public Health Expenditures in Selected* Cities by Nonofficial Agencies

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IN previous articles of this series official public health expenditures in cities participating in the annual Inter-Chamber Health Conservation Contests have been analyzed. Consideration will now be given to public health expenditures of nonofficial agencies. The material herewith presented is derived from the same source—the Health Conservation Contests—but does not cover precisely the same cities as were included in the discussion of official expenditures for the reason that only a limited number of cities presented reasonably adequate data on nonofficial expenditures.

The services† covered in the totals for nonofficial expenditures are identical with those included in the discussion of official expenditures in preceding articles but in the case of nonofficial expenditures it has been impossible to analyze them by specific services because of the infrequency with which they were reported in sufficient detail.

In each of the preceding articles attention was called to certain limitations of interpretation which must be exercised in the use of material presented. Even greater caution should be exercised in the use of figures presented on nonofficial expenditures. A reasonably reliable figure on the average per capita expenditure for public health from nonofficial sources would be most desirable and useful. This is not possible from the data at hand. Figures presented in this article deal with a definitely limited group of cities, and the discussion will therefore be limited to nonofficial expenditures and their relationship to official expenditures in these cities. These figures must not be interpreted as necessarily portraying average per capita public health expenditures from nonofficial sources for the country as a whole. With these words of caution we may proceed to a discussion of the figures.

NOTE: This is the fourth article based on the Report of the Sub-committee on Current Practices of Health Departments of the Committee on Administrative Practice. The members are: Joseph W. Mountin, M.D., *Chairman*, E. L. Bishop, M.D., Louis I. Dublin, Ph.D., Allen W. Freeman, M.D., George T. Palmer, Dr.P.H., John L. Rice, M.D., and W. Frank Walker, Dr.P.H. Former articles by Dr. Mountin appeared in March and May *Journals* and an article by Dr. Walker in the July *Journal*.

* These cities were not selected voluntarily but rather by necessity. The group includes only those cities for which satisfactory data on nonofficial expenditures were available.

† Services included in the totals for both official and nonofficial expenditures are: administration, vital statistics, general sanitation, food, drugs, and milk, child health supervision (including maternity, infancy, preschool and school health services), communicable disease, tuberculosis, venereal disease and laboratory.

TABLE I

OFFICIAL AND NONOFFICIAL EXPENDITURES FOR HEALTH SERVICES * IN CERTAIN AMERICAN CITIES FOR THE YEARS 1930–1934

Year	Number of Cities Reporting	Population † Represented	Expenditures by		Per Capita (in cents)	
			Official Agencies	Nonofficial Agencies	Official	Nonofficial
1930	55	14,575,591	$12,546,091.94	$8,680,728.02	86.1	59.6
1931	59	16,526,250	14,537,367.22	9,880,147.22	88.0	59.7
1932	56	15,959,854	13,795,876.37	7,344,014.23	86.4	46.0
1933	49	14,076,179	10,973,754.20	6,135,657.53	78.8	43.6
1934	45	9,657,708	8,416,721.43	4,664,073.50	87.2	48.3

* Exclusive of hospitalization, institutional care, medical relief, garbage collection and disposal and capital expenditures and deficits.

† 1930 Census.

Official expenditures include Board of Education but not expenditures for physical education or health instruction by teachers.

Nonofficial expenditures are for the same services as official expenditures, the funds for which are derived from sources other than taxation.

Table I gives official and nonofficial expenditures for health services in certain American cities for the years 1930–1934. This table includes only those cities whose schedules for the Health Conservation Contest included reasonably complete data on both official and nonofficial expenditures. Because of the inadequacy of reporting nonofficial expenditures in cities of the lower population groups, only cities of over 50,000 population have been included in this table. The cities reporting for each of the several years are not always the same. As a matter of fact, only 27 cities reported consistently during each of the 5 years for which figures are presented.

This table indicates that during 1930 in a group of 55 selected cities (cities of over 50,000 population which competed in the Health Conservation Contest and submitted satisfactory data on nonofficial expenditures), official public health expenditures averaged approximately 86 cents per capita, and nonofficial expenditures about 59 cents. Official expenditures declined from a high of 88 cents in 1931, to a low of 78.8 cents in 1933, a reduction of 11 per cent, and then made some recovery, to 87.2 cents in 1934. Nonofficial expenditures reached a high of 59.7 cents per capita in 1931, and declined to 43.6 cents in 1933, a reduction of 27 per cent, and then experienced a slight increase to 48.3 cents in 1934. It should be borne in mind that when comparing the group of cities in 1930 with the group in 1933 and 1934, somewhat similar, but not in all instances the same, cities are being considered.

A study of the individual cities which are included in this table indicates that the recovery noted in 1934 was due principally to an increase in expenditures in cities of over 500,000 population, and that this increase was not uniformly experienced in the smaller cities, particularly in the case of the nonofficial agencies.

Table II gives both official and nonofficial expenditures in the 27 cities which made reasonably adequate reports for each of the 5 years 1930–1934. This table quite obviously provides a more reliable basis for comparison than does Table I since only those cities which reported continuously for 5 years are included. On the other hand, fewer cities are being considered and the group is more highly selected from several points of view.

It will be noted that in this selected group of cities (cities of over 50,000 population which competed in the

TABLE II

OFFICIAL AND NONOFFICIAL EXPENDITURES FOR HEALTH SERVICES * IN THE SAME CITIES REPORTING FOR THE FIVE-YEAR PERIOD 1930–1934

Year	Number of Cities Reporting	Population † Represented	Expenditures by		Per Capita (in cents)	
			Official Agencies	Nonofficial Agencies	Official	Nonofficial
1930	27	7,278,316	$7,349,852.52	$4,663,309.40	101.0	64.0
1931	27	7,278,316	7,683,036.54	4,861,062.36	105.5	66.8
1932	27	7,278,316	6,915,409.30	3,555,652.86	95.4	48.9
1933	27	7,278,316	6,433,350.98	3,545,931.88	88.4	48.7
1934	27	7,278,316	6,699,449.28	3,685,646.96	92.0	50.6

* Exclusive of hospitalization, institutional care, medical relief, garbage collection and disposal and capital expenditures and deficits.

† 1930 Census.

Official expenditures include Board of Education but not expenditures for physical education or health instruction by teachers.

Nonofficial expenditures are for the same services as official expenditures, the funds for which are derived from sources other than taxation.

Health Contest and submitted satisfactory data on both official and nonofficial expenditures for each of the 5 years) official per capita expenditures reached a high point of 105.5 cents in 1931, declined to 88.4 cents in 1933, a reduction of 11.9 per cent, and rose to 92.0 cents in 1934. Nonofficial expenditures reached a high of 66.8 cents in 1931 and declined to a low of 48.7 cents in 1933, a reduction of 27.1 per cent, and then rose slightly in 1934 to 50.6 cents.

In 1931, the high point for both official and nonofficial expenditures, the average total per capita public health expenditure in these 27 cities was 172.3 cents. Of this amount 105.5 cents, or 61.2 per cent, came from official, that is, tax supported sources; and 66.8 cents, or 38.8 per cent, from the nonofficial agencies.

In 1933, the low year for the combined expenditures, the average total per capita expenditure was 137.1 cents of which 88.4 cents, or 64.5 per cent, came from official sources and 48.7 cents, or 35.5 per cent, from nonofficial sources.

In 1934, total expenditures averaged 142.6 cents per capita, of which 92.0 cents, or 64.5 per cent, came from official and 50.6 cents, or 35.5 per cent, from nonofficial sources.

In addition to the limitations which have already been mentioned, there are a number of other points which should be considered in attempting to interpret these figures.

Both Tables I and II contain a more highly selected group of cities than even the remarks made with respect to them would seem to indicate. That this is true seems to be borne out by the fact that the official per capita expenditures as reported in these tables are appreciably higher than those reported in any of the tables of the preceding articles. This is due to the fact that the figures presented in this paper are limited to cities of over 50,000 population which have submitted reasonably adequate data on *both* official and nonofficial expenditures and, in the case of Table II, to the 27 cities which submitted these data continuously for 5 years. Both of these groups, and particularly the group in Table II, consist of those cities with the more highly developed health programs and the highest per capita expenditures. They are not necessarily typical of the country as a whole.

The figures presented on nonofficial expenditures even in this special group are probably somewhat higher than they actually would be if all the facts with respect to them were known. It

TABLE III

TOTAL AND PER CAPITA OFFICIAL AND NONOFFICIAL EXPENDITURES FOR HEALTH SERVICES * IN 27 CITIES ACCORDING TO GEOGRAPHIC LOCATION FOR THE 5 YEARS 1930–1934

Geographic Section	Year	Number of Cities Reporting	Population † Represented	Expenditures by		Per Capita (in cents)	
				Official Agencies	Nonofficial Agencies	Official	Nonofficial
Eastern ‡	1930	1	53,569	$ 42,515.00	$ 7,560.00	79.4	14.1
	1931	1	53,569	27,416.00	11,860.00	51.2	22.1
	1932	1	53,569	24,526.00	11,860.00	45.8	22.1
	1933	1	53,569	26,419.00	9,870.00	49.3	18.4
	1934	1	53,569	28,608.00	11,583.00	53.4	21.6
Northeastern ‡	1930	17	5,529,795	6,019,793.20	4,071,470.90	108.9	73.6
	1931	17	5,529,795	6,382,195.26	4,201,333.70	115.4	76.0
	1932	17	5,529,795	5,770,327.77	3,016,181.76	104.3	54.5
	1933	17	5,529,795	5,234,344.66	3,011,667.67	94.7	54.5
	1934	17	5,529,795	5,418,817.00	3,058,758.46	98.0	55.3
Southeastern ‡	1930	1	270,366	268,620.00	88,906.00	99.3	32.9
	1931	1	270,366	271,720.00	86,393.00	100.5	31.9
	1932	1	270,366	243,008.00	75,344.00	89.9	27.9
	1933	1	270,366	227,449.26	85,500.00	84.1	31.6
	1934	1	270,366	257,747.00	142,815.35	95.3	52.8
South Central ‡	1930	2	423,922	298,229.22	83,255.28	70.4	19.6
	1931	2	423,922	317,848.86	93,008.61	75.0	21.9
	1932	2	423,922	273,201.35	66,993.93	64.4	15.8
	1933	2	423,922	282,707.32	53,544.77	66.7	12.6
	1934	2	423,922	286,316.85	55,816.92	67.5	13.2
North Central ‡	1930	4	784,311	537,842.81	326,059.78	68.6	41.6
	1931	4	784,311	507,099.97	355,386.97	64.7	45.3
	1932	4	784,311	454,799.29	288,988.74	58.0	36.8
	1933	4	784,311	509,981.13	311,283.42	65.0	39.7
	1934	4	784,311	537,042.48	330,700.25	68.5	42.2
Western ‡	1930	2	216,353	182,852.29	96,057.44	84.5	44.4
	1931	2	216,353	176,756.45	113,080.08	81.7	52.3
	1932	2	216,353	175,678.52	96,284.43	81.2	44.5
	1933	2	216,353	152,449.61	74,066.02	70.5	34.2
	1934	2	216,353	170,917.95	85,972.98	79.0	39.7

* Exclusive of hospitalization, institutional care, medical relief, garbage collection and disposal and capital expenditures and deficits.

† 1930 Census.

‡ *Northeastern:* Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Wisconsin.

Eastern: Delaware, Kentucky, Maryland, North Carolina, Tennessee, Virginia, West Virginia.

Southeastern: Alabama, Florida, Georgia, Mississippi, South Carolina.

South Central: Arkansas, Louisiana, New Mexico, Oklahoma, Texas.

North Central: Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wyoming.

Western: Arizona, California, Idaho, Nevada, Oregon, Utah, Washington.

Official expenditures include Board of Education but not expenditures for physical education or health instruction by teachers.

Nonofficial expenditures are for the same services as official expenditures, the funds for which are derived from sources other than taxation.

is possible, for example, that duplication of figures may have occurred, such as where a voluntary agency is subsidized by an official agency and the amount of such subsidy may be included in both the official and nonofficial expenditures; overstatement of the proportion of hospital outpatient expenditures which should be included under the Contest definition of health services; and the possible inclusion of expenditures which, according to the Contest's definition of public health, should not have been considered as public health services, such as a fund for purchasing milk, or certain elements of general medical service. While the amount of these errors, at least as expressed as a percentage of the total, would not in all probability

be great, it may make the figure somewhat higher than the true one. Unfortunately the exact extent of these errors cannot be determined for the reason that so few cities have reported their nonofficial expenditures in sufficient detail to permit the necessary analysis.

Table III, giving official and nonofficial expenditures in the same 27 cities as were presented in Table II, but divided according to geographic location, shows that the figures in Table II are largely determined by the cities of the northeastern area of the country and seem to account partially for the relatively high expenditures given in all tables. Figures by geographic location, although based on too few cities to give a reliable picture in all areas except the northeastern, parallel each other sufficiently closely to indicate that the trends as shown in Table II are probably consistent for the country as a whole.

While it would be impossible in the short space of this article to analyze the extent to which various health services are supported in whole or in part by nonofficial agencies, it seems quite certain that bedside nursing,* public health nursing, food and milk control, child health supervision, and tuberculosis control and prevention, constituted the most important contributions of the nonofficial agencies.

* It is recognized that bedside nursing, if properly carried on, should include public health nursing, but the distinction is made here to differentiate between an organization which carries only bedside nursing from one that carries a health supervision service.

SUMMARY

In a selected group of cities having well organized health services and much higher than average total per capita health expenditures, the nonofficial agencies contributed in 1931 nearly 40 per cent of funds used for the support of selected health services considered in this article. In 1934 in this same group of cities the nonofficial agencies contributed 35 per cent of the funds used for the same purpose. Nonofficial expenditures averaged (in the group of 27 cities given in Table II) 66.8 cents per capita in 1931, and dropped to 48.7 cents per capita in 1933, a reduction of 27.1 per cent. While both official and nonofficial expenditures have experienced a drop since 1931, the decline in the nonofficial agencies has been much sharper than in the official agencies.

The possible inaccuracies which enter into the reporting of nonofficial expenditures and the incompleteness and inadequacy with which such reports are made point to a necessity for better reporting. There is need, in the nonofficial, as there is also in the official, field for better definitions of services, more nearly universal reporting of nonofficial expenditures, and for allocation of such expenditures according to specific health services.

New Germany Teaches Her People

An Account of the Health Exposition of Berlin

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HEALTH expositions have the reputation of being tawdry, superficial, and of questionable value. That reputation does not apply to the Berlin health exposition of 1935. It commanded attention without ballyhoo, interpreted health to the people without vulgarizing facts, and roused the people to a sense of citizen-duty in the "new" Germany.

German cities are "museum conscious." To operate an exposition is no great risk—attendance is assured, and skill in installing it is readily at hand. This one aptly called "Das Wunder des Lebens," was carefully planned well in advance. The long experience and expert workmanship of the German Hygiene Museum at Dresden assured the success of the enterprise from the beginning. The new government gave it strong support; excellent publicity made it known to all the people. It is no wonder that on some days the attendance reached 30,000, though the admission fee was fairly high. The exposition ran for 6 weeks, March 23 to May 5, 1935. Income from fees and from concessionaires was considerable, yet not enough to meet entirely the enormous cost of manufacturing the exhibits and of manning the exposition.

One hesitates to describe the exposition in words; a suggestive outline must suffice. The visitor, after passing through one of four turnstiles, enters the Honor Hall, a vast, impressively empty vestibule. In front of him and occupying the entire wall he sees only a monumental relief frieze depicting the onward and upward sweep of a nation, led by a giant eagle. With no noise to distract his attention (for the floors are covered with carpet), with no objects in the hall except a few slender pillars from which hidden lights softly illuminate the hall, his attention is concentrated on this one picture in stone. Without being told, he "feels" rather than learns, that what he is about to see is of vital concern to the nation—a vast group-yearning toward a high goal and that he is a participant in it.

From this "experience" he next passes into a large, high ceilinged, dimly lighted room. An inscription in gold letters on the wall, quotes Augustinus: "Men marvel at the roaring sea, at flowing waters and at the spectacle of the heavens, and in their wonder forget the wonder they are themselves." On a pedestal occupying a rotunda is the transparent man, arms uplifted in the attitude of the "Praying Boy" celebrated by Goethe. There is nothing to divert the

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* Traveling as a fellow of the Carl Schurz Foundation the author visited the health exposition held in Berlin in the spring of 1935. To Dr. Bruno Gebhard, who attended the meeting of the Association at Pasadena, and who was the scientific director of the exposition, he is indebted for numerous courtesies and lucid explanations.

attention from this one work of art. For a moment one enjoys the sheer beauty of the human body. Then the organs light up, one by one, and the concealed voice of the phonograph tells the story.

Passing out of this sanctuary, the visitor's eyes are dazzled by an array of colorful exhibits, many of them blinking or moving. The center area is like an open boulevard sweeping toward a wide staircase at the further end, which leads gracefully to a splashing fountain. This is the main hall and the heart of the exposition. Anatomy and physiology are the subjects taught, by means of models, instruments, and pictures.

Each subdivision is so designed as to convey atmosphere (*stimmung*) as well as exact information. The motif of the section on respiration, to cite an example, is lightness or airiness, with blue and silver, the predominating colors. The note of the section on circulation, is strength and elasticity; red and black are the dominant colors.

Ingenious devices give a conception of area, extent, and function of the various organs. For instance, a cage made of tennis netting shows the volume of air breathed in a day; a large rectangular area on the ceiling, painted red, shows the surface that might be covered with the hemoglobin of one person; a table, the four legs of which are as many tibiae, support the weight of 20 men; piles of groceries and provisions show how much food one man consumes in a year; and so on.

Huge models of single organs, with careful detail, attract the eye. A giant ear rocks back and forth to demonstrate the mechanism of the semicircular canals; an eye of the same proportions offers one an opportunity to see how the lens reflects images on the retina; a huge brain fitted out with push buttons shows what parts of the body each section of the brain

The Transparent Man

regulates. There is a "smelling table" where one can test his sharpness of scent; a skin-color scale with a mirror arrangement so that one may classify his own complexion; a dozen or more respirators for those who wish to test their lung capacity. There is an apparatus for testing color perception and, incidentally, the technician in charge is gathering valuable research data on color-blindness from the hordes of people who come for a tryout. To "do" everything in this hall in a hurried tour requires at least an hour; to study and understand it all would easily consume 4 or 5 solid hours of a nimble-witted person's time, in spite of the fact that the ideas are skillfully portrayed so as to be grasped easily and quickly. Much of the material in this hall is a duplication of the contents of the Dresden Museum, though some of the exhibits are improvements, and some entirely new.

The visitor passes from this hall up a broad stairway to a balcony restaurant, where, while refreshing himself, he surveys the kaleidoscopic yet orderly display he has just visited.

Hard by the main hall is the Microvarium, an enclosed arena, the cylindrical wall of which is the screen on which epidiascope pictures are shown in succession. In the center of the room and elevated about 10 feet is the laboratory where biological specimens are preserved and prepared for the 'scope. A gallery surrounding the laboratory is the stage for 8 epidiascopes, each operated by a technician. As the specimens, alive and squirming, are shown on the screen, one after another, an attendant explains them to the group of some 30 persons passing along the wall.

The next great hall has to do with race hygiene; "The Carriers of Life" it is called. Again the visitor is "put in tune," this time by a unique bell tower made of rough hewn timbers and rising loftily out of a semi-enclosed area, the boundaries of which are marked off by symbolical bas-reliefs of heroic proportions. Every 5 minutes a huge hour glass in the lower compartment of the open tower, its sand having run out, turns over. It marks the death of 7 Germans. But instantly a nursery song rings out from the set of porcelain bells in the upper tower. Cheerfully these announce the birth of 9 German babies. Again and again the visitor hears the tinkle of the bells —forcefully reminding him of Germany's vital statistics.

The rest of the exhibits of this hall, with a few exceptions, do not compare favorably from a technical standpoint, with those of the main hall. The exhibits are crowded, sometimes dull and arranged in poor taste. Posters, none too well lettered, sermonize too much, and complicated organization charts confuse. The reason for this inferior exhibit technic, one surmises, is that this hall represents the handiwork of newer government personnel, who have not yet had much experience in graphic display. The subject matter deals

Vestibule to Exhibit on "The Carrier of Life" with Bell Tower

primarily with race hygiene. Eugenics charts and family trees abound. Sad galleries of unfortunate biological misfits—idiots, people with heritable deformities, incurable criminals—drive home the logic back of the new sterilization laws. The anti-Semitic policy is meticulously explained. Exhibits deploring Germany's falling birth rate betray what a sore problem this is to the new state; and, as a corollary what Germany expects of her young matrons is made clear in no uncertain phrases. To a foreigner interested in the present psychology of the German people and in the methods of public propaganda bureaus, this hall is, of course, a treasure house and more illuminating than pages of printed matter or folios of documents.

Public health occupies a hall called "The Maintenance of Life." It attempts to show the facilities of the government, including occupational therapy and curative medicine as well as the sanitary and educational activities of the Nazi party.

Another great hall deals with the emigration problem. In East Prussia, one learns, there is much unused land and a shortage of inhabitants. To populate this area the government offers homesteads to married couples of good heritage (as interpreted by the government) who have a desire to rear large families. In this hall there is a full sized model of the house that is offered by the government to young married persons, fully furnished, including even growing fruit trees and a cunning family of goats. Here, a number of the public welfare projects are also shown in good technic.

In the next hall are the commercial exhibits and these are much like those we see in America. Firms dealing in foods, clothing, household equipment, and so forth, occupy booths, distribute samples, and cry their wares. Originally there was some question as to whether commercial concerns should be permitted to exhibit, but the management decided, wisely I think, to include them. A "health" show, an official explained to me, would attract the health cranks, but the lure of free samples, attractive displays of furniture, food, and what not, brings in the mothers and fathers, many of whom would not have come for a health exhibit alone.

IMPRESSIONS

A few impressions which strike the American (prejudiced by past experience with health expositions) may be worth noting. First there is the excellent advantage taken of open space. Space is valuable and the temptation of the exhibitor is to "cover" every inch of it. The German exhibitor, however, uses space to direct attention to what is important. The vast emptiness of the vestibule (Honor Hall) is impressive and one's attention is concentrated on the frieze. The chapel-like space occupied by the transparent man creates an attitude of respect, if not awe. The broad avenue looking toward the rising staircase and the fountain, enhances the effect of commotion and liveliness of the exhibits which bound it on each side.

All floors are covered with a silencing matting. One is not disturbed by the clatter of countless feet, or tempted to litter the floor with pamphlets and orange seeds. This one nicety of technic, though it cost thousands of dollars, is well worth its price and is cited as an example of the attention to detail.

The attempt always to establish atmosphere in consonance with the particular exhibit is, as mentioned before, praiseworthy.

The opportunity to press buttons, pull levers, test one's physical abilities and in general to "play" with the exhibits is a grateful relief to the sight-

A Section of Exhibit on Respiration. Netting and Color Scheme of Silver and Blue Are in Keeping with the Nature of the Exhibit

seer who has walked miles of musty galleries dotted with " don't touch " signs.

The Microvarium is a unique feature, instructive and fascinating. The conducted tours, the illustrated lectures, and the personal demonstrations have fine pedagogical value.

The opportunity to rest in the refreshment halls and the several movie auditoriums is appreciated by the footweary.

The excellent advertising and publicity campaign was equal to, if not better than, similar efforts we customarily make in the United States, and served to spread information widely among those who never saw the exhibit.

VALUE OF EXHIBIT

An attempt to appraise the political and social value of the exposition as a whole, would be too ambitious. It is enough to say that the success of the enterprise as an exposition was unquestioned, for it reached some three-quarters of a million people in 6 weeks, entertained and instructed them, and undoubtedly stimulated an interest in the aims of the new government. Limiting the discussion to that part of the exposition which had to do with scientific biology, what shall we say as to the ultimate value of the teaching methods employed? In America some of us are skeptical of the purely informational type of teaching, even when that is coupled with appeals to the emotions. What springs of motivation, we may ask, are set going by a knowledge of how food is digested, or how enduring the heart is, or why epileptics should be sterilized? Will an understanding of endocrine glands safeguard anyone's health? Is it useful for anyone to know that his bowels are 7 meters long, or that his capillaries, if laid end to end would reach from Budapest to Wherever?

All of these facts are interesting, but what is accomplished by teaching them? Certainly for a substantial proportion

of the population (more in Germany than in America, perhaps) this kind of teaching is extremely valuable, in that it awakens interest, supplies basic information in easily understood form, and builds a substantial foundation of knowledge on which it will be easy later to construct a well rounded health attitude. The biologic knowledge so attractively presented, makes people receptive to modern medical ideas and lessens the resistance to public health practices. To an extent, it serves also to help people discriminate between sound and unsound health advice; to distinguish between scientific medicine and quackery. Above all, it impresses upon even the most casual the "Wonder of Life," Admiration for the marvel of the human body, reverence for the mysterious thing we call life, is worth cultivating in this surfeited generation.

The expense of this kind of health education is admittedly heavy, as compared with the publicity campaigns common in our country. However, the greater permanence of the impressions made, the greater number of people reached and interested, doubtless justifies the expense. It is the kind of project that might best be financed by a bequest or foundation, the donors of which have faith in the power of knowledge, and generosity enough to let others reap where they have sown.

Cooking of Vegetables

FOUR series of samples of spinach, two of mustard, one of cabbage, and one of turnip tops were cooked by four different methods, and the losses in iron, copper and manganese, and total solids were ascertained. The methods employed were boiling in 2 liters of water; boiling in 4 liters of water; steaming; cooking under 15 pounds pressure. The average losses for iron for these methods were, respectively, 27, 34, 4 and 8 per cent; for copper 29, 34, 9 and 16 per cent; for manganese 32, 48, 6 and 13 per cent; for total solids 24, 32, 6 and 11 per cent. It was found that the greatest losses were obtained when the vegetables were boiled, while the smallest losses occurred with steaming or pressure-cooking methods. As a means of introducing these minerals into the diet, steaming and pressure cooking are, therefore, to be recommended in the preparation of vegetables.—F. Bartow Culp, and J. E. Copenhaver, *J. Home Econ.*, May, 1935, page 308.

Standardization of the Methylene Blue Reduction Test by the Use of Methylene Blue Thiocyanate*

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SINCE the first use of methylene blue reduction as an indicator of bacteriological quality in milk, fluid milk supplies on this continent have undergone notable improvement. Moreover, during this period it has been shown that the inaccuracies in the test increase with increasing reduction times.[6, 8, 9] An effort to minimize these inaccuracies is, therefore, worth while.

Because of the extensive use of this test in milk control activities, it becomes necessary to duplicate frequently the standard tablets of methylene blue certified by the Commission on Standardization of Biological Stains and recognized by the American Public Health Association in *Standard Methods of Milk Analysis*.[1] This duplication involves not only the creation of standards but also the purification or, at least, the determination of purity of the dye. Clark, Cohen, and Gibbs[2] review the difficulty, if not the impossibility, either of purification or of determination of purity of methylene blue chloride, the methylene blue salt used in these tablets.

The nearest present approach to an absolute color standard in this test is that the milk should be colored a robin's egg blue. Among 6 workers in this institution, each of whom has had considerable experience with the test, there was no unanimity of opinion as to what depth of color in milk constitutes "robin's egg" blue. At the request of the Chairman of the Commission on Standardization of Biological Stains an attempt has been made to develop more exact standards.

Drew and Head[3] prepared methylene blue thiocyanate which crystallized from aqueous solution—but carrying no water of crystallization—with almost 100 per cent purity. This salt, therefore, seemed to offer some attractive advantages over the chloride and gave promise of being a satisfactory means of standardizing the methylene blue reduction test. The present authors prepared by a simple process[10] methylene blue thiocyanate and tested it as a substitute for methylene blue chloride.

METHODS

Standard Methods of Milk Analysis was followed as closely as possible in the reduction test technic and reduction times are reported in hours and minutes, 1:15 meaning 1 hour and 15

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† Associate Referee, Committee on Standard Methods for the Examination of Dairy and Food Products.

minutes. Three dyes were used as follows:

1. *American*—The standard American Tablet, lot 2,360, purchased in the United States not later than 1924, one tablet being dissolved in 200 ml. of distilled water of which solution 1 ml. was added to 10 ml. of milk.

2. *Thiocyanate*—Methylene blue thiocyanate prepared by the present authors and used in varying concentrations.

3. *Danish*—Tablets purchased from Blauenfeldt and Tvede, Copenhagen, not later than 1916. Aqueous solutions of these tablets were added to 10 ml. of milk in a concentration identical to that used in Europe with 40 ml. of milk.

REDUCTION TIMES, POTENTIALS, AND POISING ACTION

When methylene blue thiocyanate is added to milk in a concentration giving the same depth of color as is observed in the standard test, the reduction times of the thiocyanate and the chloride are identical.[10] These results were verified by a number of laboratories in the United States and Canada to which samples of the thiocyanate were distributed through the courtesy of the Chairman of the Commission on Standardization of Biological Stains.

No essential difference was found between the oxidation-reduction potential ranges over which the thiocyanate and the chloride reduce in milk or in aqueous solution on titration with titanous chloride. The poising action of the former dye is no greater in milk than that of the latter.

CONCENTRATION

In 1924 Hastings[4] reported that the Danish technic resulted in a depth of color in milk the approximate equivalent of 1 part of crystalline methylene blue chloride (of unreported purity) in 200,000 parts of milk. When 5 Danish tablets were each dissolved in 200 ml. of water the aqueous solutions varied in color depth between 67 and 100 color units. The American tablets were found to be 40–46 per cent of their intended strength. It may be assumed, therefore, that in the standard American test the dye concentration in the milk is approximately 1:465,000.

In the present study aqueous solutions of methylene blue thiocyanate were prepared with concentrations of 1:20,000. Duboscq colorimeter comparisons of these solutions with aqueous solutions of Danish and American tablets were made. When 4 Danish tablets were each dissolved in 200 ml. of distilled water, the concentrations of the solutions in terms of methylene blue thiocyanate were as low as 1:4,761 and as high as 1:4,000, the average being 1:4,440. By computation the concentration of dye in milk in the test as carried out in Europe would vary between 1:195,201 and 1:164,000, the average being 1:181,050.

When compared with thiocyanate in a similar manner American tablets when dissolved in 200 ml. of distilled water varied in concentration between 1:69,561 and 1:60,377, the average of 5 being 1:64,468. By computation the concentration of dye in milk in the American test varies between 1:765,215 and 1:664,147, averaging 1:709,148. This variation is, therefore, greater than 15 per cent. Working independently and using dye from two different preparations the writers were able to check each other with respect to methylene blue thiocyanate concentrations to within 3.25 per cent.

When methylene blue thiocyanate was added to milk in a concentration of approximately 1:700,000 the same depth of blue resulted as is observed in the standard American test. Burkey reports[5] that the concentrations which would more nearly compare with the standard American solution in milk were 1:480,000 and 1:560,000 respectively for two preparations of methylene blue thiocyanate. No attempt is made to explain the discrepancies in the results of the three groups of

workers but the difficulty of establishing a color standard based upon the depth of blue in the milk is at once apparent.

That the milk was lighter in color than expected was noted immediately the original tablets were placed on the market. This lack of depth of color gives rise to more serious trouble in Alberta than in any other area in which the writers have had experience. Practical operators of the test frequently use 2 and, at times, 3 ml. of the standard dye solution per 10 ml. of milk. There can be no question of the necessity for increasing the dye concentration in the test in this province. As Hastings [4] has pointed out there seems to be no reason for accepting on this continent the European standard of dye concentration. The amount of dye used should be the minimum required to give a sharp end-point because increased concentration results in increased poising and lethal actions. We are of the opinion that a concentration of 1 part of dye to 300,000 parts of milk is satisfactory.

There is a present and growing need for standardizing the methylene blue reduction test as applied to sweet cream. As a step in this direction Macy [7] recommends using a dye solution of triple strength. We have found that when methylene blue thiocyanate is added to cream in a concentration of 1:300,000, the color approximates rather closely that obtained in the technic suggested by Macy. It is advantageous to use the same dye solution for cream as for milk.

This increase in dye concentration will result in increased reduction times for most milks. The average increase for 25 milks of varying bacteriological quality was found to be 30 minutes when a methylene blue thiocyanate concentration of 1:300,000 was used (Table I). The differences may be due to greater lethal and poising action or color depth. Because the increased reduction time tends to be constant in all classes of milk, greater depth of color may be the main factor.

TABLE I

AMERICAN AND DANISH REDUCTION TIMES COMPARED WITH REDUCTION TIMES OF METHYLENE BLUE THIOCYANATE IN A CONCENTRATION OF 1:300,000

Milk Number	*American*	*Thiocyanate*	*Danish*
1	1:00	1:15	1:15
2	1:00	1:15	1:15
3	4:30	5:30	5:15
4	4:30	5:30	4:30
5	4:45	5:15	5:15
6	5:15	5:45	5:45
7	5:15	6:00	6:00
8	5:30	6:15	6:00
9	5:45	6:15	6:15
10	5:45	6:45	6:45
11	5:45	6:15	6:15
12	6:00	6:30	6:45
13	6:45	8:00	8:00
14	7:00	7:15	7:00
15	7:00	8:00	8:00
16	7:00	8:00	8:00
17	7:00	8:00	8:00
18	7:00	8:00	8:00
19	7:45	8:00	8:00
20	8:00	8:30	8:30
21	8:00	8:30	8:30
22	8:30	9:00	9:15
23	8:30	9:00	9:15
24	8:30	8:30	9:15
25	9:00	9:15	9:30
Average	6:13	6:43	6:49

RECOMMENDATIONS

Exact standards for the methylene blue reduction test are becoming increasingly important. The inadequacy of the present empirical dye standards rests largely upon the difficulty of purification and determination of purity of methylene blue chloride.

Therefore, it is recommended that—

1. Methylene blue thiocyanate be substituted for methylene blue chloride in the standard tablets used in the methylene blue reduction test because of the reproducibility of the former dye.

2. One part of dye to 300,000 parts of milk be adopted as the standard concentration in this test.

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Control of Rabies

HERETOFORE reliance in the control of rabies has unwisely and almost exclusively been placed in regulations which were difficult of enforcement. Future action, to be effective, must embrace educational efforts, primarily involving the dog owner but also extending to the general public. It is also to be hoped that success may be reached in preparing an effective vaccine against canine rabies.

Inasmuch as the muzzling of dogs, as a practical measure, is attended by difficulties, while leashing as a substitute is now on trial, the responsibility for bites should be placed squarely upon each dog owner. In any event, a city should be fully compensated for its financial outlay in preventing human and canine rabies. An adequate program includes persistent, all-year effort in ridding the community of stray and unlicensed animals. For this purpose a sufficiently large individual dog tax should be imposed.

The writer believes that each person bitten should receive compensation, whether the bite is provoked or unprovoked. A dog bite, frequently involving pain, fright, torn clothing, a doctor's bill, and sometimes hospital treatment, is a distressing experience. Moreover, a course of prophylactic injections is an ordeal, particularly for children.

If the owners of biting dogs were sufficiently penalized, there would be a marked and rapid reduction in occurrences.—Robert Olesen, *Public Health Rep.*, Aug. 16, 1935.

Campaign Against Tuberculosis in College Students*

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THE campaign against tuberculosis is beginning to receive the serious attention of college administrators and college physicians. Prevention and early identification of tuberculosis presents a challenge to physicians who are interested in the prevention and early care of illnesses which bring disability upon students. A college education represents considerable investment of money and educational resources which cannot be realized in terms of disabling illnesses or premature cessation of the college course. Conditions imposed upon the boy or girl in college who breaks down with tuberculosis before graduation cause serious economic losses to the individual, to the college, and to the community. Since there are nearly 1,000,000 young men and women now attending our American colleges and universities, we are justified in asking what the colleges can do, and what they are doing, to reduce such tragic accidents as tuberculosis.

Although most students live healthy and well adjusted lives in college, there are certain factors in the environment which may encourage the development of tuberculosis. Important points in the tuberculosis prevention programs of our associations, such as, regulated living, adequate food, rest, sleep, and freedom from stresses are sometimes not observed by college students. These young people are at an age and in an environment where the rules of healthful living may be loosely observed and where guidance from parents and the family physician is often not available. Academic competition is keen; ambition for accomplishment is high; and in these days there is often the need to carry outside work for self-support. There is furthermore a tendency to seek medical advice late rather than early. The college should therefore provide some form of medical supervision which will guide the student toward early medical care and a closer observation of those health rules which help to prevent tuberculosis.

The college age should be further emphasized as an age where tuberculosis is still claiming many victims. This disease causes more deaths between the ages of 15 and 45 than any other disease, with actual deaths reaching the high point for all ages between 20 and 24. Mortality rates show a slightly different picture, but here again the death rates increase rapidly between 10 and 20 and the high point for women is between 20 and 24. We are all familiar with the striking decline in death rates from this disease in recent years, and there has been a consequent decline in rates of the young adult age groups, except that the decline has been less for young women

* Read at the Sixth Annual Meeting of the Western Branch, American Public Health Association, in Helena, Mont., July 1, 1935.

than for young men. A study of the percentage decline reveals that the greatest reductions have occurred from birth to 14 years, and in the age groups from 25 to 64, while the smallest decline has occurred in the aged and in young people between 15 and 24. This is the age group in which life holds the greatest promise, the present seems happiest, and the future brightest. In this age group the decline in deaths has been too small and here the present and future campaign against tuberculosis should be concentrated.

It might be concluded from these statements that colleges must be sending into sanatoria and into the care of chest specialists, great numbers of victims each year. Since this is not true, we might assume that the number of undiscovered cases in colleges is fairly large. Preliminary studies in certain colleges indicate that such is the case and show that the tuberculosis problem is one which presents to the college a serious responsibility and to the college physician a worthy challenge.

Colleges are meeting this responsibility as a part of a more general responsibility for the health of their students. Many colleges now have established health programs set up primarily to maintain and protect the health of students. The extent of activities in these programs depends upon local needs and resources of the institution, but all carry the following general activities: prevention of the spread of communicable disease, protection of the student against disabling illness or injury, formal and informal programs of health instruction, and encouragement of students toward the establishment of good health practices. These activities have become the functions of several departments or schools of the college, such as, the College Public Health Service, the Student Health Service, Department or School of Hygiene, and the Department or School of Physical Education. In some colleges these departments are combined in one school, thus centering all health activities and services under one roof.

The need for adopting programs of prevention has been the outcome of rather discouraging experience with case finding in colleges. We have learned that few early cases of tuberculosis will be found if we depend upon the student with early symptoms to report. Too often when he reports to the Health Service with symptoms he is found to have a well advanced lesion, which means a long period of illness for him and exposure of his associates over a period before the lesion was recognized. In the past 2 years at Stanford University, with a health program which encourages the students to report early, we have picked up only 3 early cases of tuberculosis among those coming with symptoms. Two of these reported because of hemorrhage. Moderately advanced lesions, or lesions with cavitation, were found in all others who reported because of symptoms. On the side of the prevention program, to the contrary, which consists in giving tuberculin tests to all contacts, to all who give suspicious histories, or who have suspicious physical signs, and to special groups, with X-ray studies of positive reactors, we have discovered 5 students during the same time with incipient disease who had not complained of illness. One of these, a medical student, who received the test and X-ray as a routine part of the examination required on admission, was found to have an advanced lesion with cavitation, yet had no symptoms, and no physical signs. We are therefore convinced that the greatest opportunity lies in discovering the disease *before* the occurrence of symptoms sufficient to bring the patient to the doctor.

TABLE I

INCIDENCE OF TUBERCULOSIS IN STUDENTS OF 21 COLLEGES AS REPORTED FROM 1932–1934

	Number of Students Enrolled	Cases of Tuberculosis: Cases	Cases of Tuberculosis: Per Cent
Men	78,356	459	0.58
Women	32,720	229	0.66
Total	111,076	688	0.62

INCIDENCE OF POSITIVE TUBERCULIN REACTIONS IN STUDENTS OF 48 COLLEGES AS REPORTED FROM 1932–34

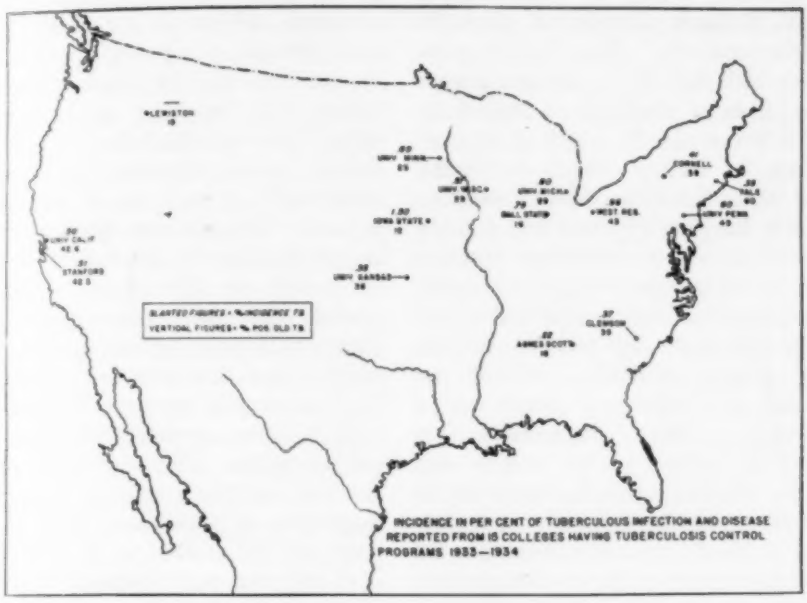
	Number of Students Tested	Positive	Per Cent
Men	17,853+	5,888	33
Women	13,061+	3,050	22
Not Separated	7,237	3,044	..
Total	38,151	11,982	31

Student Health Service physicians from over 200 colleges in the country are members of a national organization known as the American Student Health Association. Three years ago this association set up a committee composed of Dr. Ferguson of Western Reserve University, Dr. Myers of the University of Minnesota, and the author to study the tuberculosis problem in colleges, and to inaugurate a campaign against the disease which would receive the unified support of members of the association. This committee, working under the advisory direction of Drs. Kleinschmidt, Long, Chadwick, and McPhedran, has had an unusual opportunity to promote and correlate a unified program of prevention against tuberculosis in colleges. College physicians have been encouraged to set up definite control programs with uniform attention to special history forms, physical examinations, including tuberculin testing, and X-ray studies of contacts and of special groups, and follow-up studies of suspicious cases by chest specialists. Many colleges have already adopted this program and are discovering cases which had previously escaped attention. Others have started modified programs made necessary by limited resources and facilities, but are demonstrating the need for more intensive study.

In addition to its opportunity to promote the college campaign against tuberculosis, this national college project has broad research possibilities because it is under centralized control which will produce an increasing uniformity of procedure and relatively high reliability of results. Dr. Long has been the first to demonstrate its effectiveness as a research mechanism in a study on the use of purified protein derivative in college students. Among other research problems in this connection which are now being considered in various colleges are the following: The relation between positive and negative tuberculin reactors and the incidence of subsequent disease; incidence of disease by sex at the college level; effect of strenuous athletics on incidence; incidence in students in professional schools compared with general student groups; unification of methods of X-ray reports; studies of the relation between the presence of calcification and subsequent disease.

Many reports on these prevention and research programs are now coming in to the Committee on Tubercu-

CHART I


INCIDENCE IN PER CENT OF TUBERCULOUS INFECTION AND DISEASE REPORTED FROM 15 COLLEGES HAVING TUBERCULOSIS CONTROL PROGRAMS 1933—1934

losis of the American Student Health Association, from which we present a few preliminary trends. These results are seen in Table I and Chart I. Progress to date indicates 10 times as many cases of tuberculosis reported from colleges where active control programs are being conducted than where little is being done about the problem. We find that the incidence of tuberculosis and of positive tuberculin reactors varies considerably in any given college from year to year and that some colleges seem consistently freer from disease and infection than others. The incidence of infection seems to be slightly higher in men than in women students, but the incidence of disease is slightly higher in women. The percentage of positive tuberculin reactors varies greatly in colleges located in different parts of the country. Thus, Iowa State College reported only 12 per cent reactors in almost 3,000 students tested in 1933 while Yale reported 62 per cent reactors in 3,000 students tested in 1932. The reports in general indicate that positive reactors are more frequent in colleges which draw students from more densely populated districts, such as the University of Pennsylvania and Yale University, than in colleges drawing chiefly from rural districts. (Dr. Halvorsen of the University of Idaho tells me that almost no students from the rural districts in Idaho react to tuberculin, while most of those from the mining districts in southern Idaho are positive reactors.)

From the combined reports of 48 colleges for the 2 years 1932–1934, representing a total of 33,151 students tested, the general average of positive reactors was found to be 31 per cent.

These are probably not as accurate as forthcoming reports will be, since there has not been complete uniformity in tuberculin used or in dosage. Most colleges have been using the Saranac tuberculin in 1/10 mg. doses. We are now recommending the use of P.P.D. in 2 doses, which should give us more reliable and comparable results. It is unfortunate that so few data are available either from people of college age

not attending college or from younger groups similarly distributed throughout the country. The closest comparison with data from younger groups comes from a National Tuberculosis Association study in which groups of children in various states are being tested with MA-100. Miss Jessamine Whitney has recently sent me a table summarizing the positive reactors found in 101 groups tested in 18 states. Twenty-five per cent of almost 3,000 children between 10 and 14 in this study reacted positively, and 27 per cent of 1,400 between 5 and 9 reacted positively. These percentages are almost the same as for college age groups, which is rather surprising in view of the high morbidity and mortality at 20–24 as compared with the 10–14 age group. These discrepancies may be due to difference in materials and dosages and to the wide local variation in numbers of reactors which are known to occur.

The incidence of disease reported from different colleges also varies greatly, probably depending largely upon the effectiveness of the local program and perhaps on geographical location, so that we are not justified in drawing conclusions from these reports. Agnes Scott College in Georgia reports only 1 girl with tuberculosis in 450 carefully studied, while Iowa State College (where tuberculin reactors are relatively few) reported 48 cases with an enrollment of almost 3,500 students, slightly over 1 in every 100 registered. From the combined reports of 21 colleges for the 2 years 1932–1934, representing over 110,000 students enrolled, 688 cases of tuberculosis were reported. This indicates a general average of 1 case in every 160 students enrolled, or a rough morbidity rate in these colleges of 625 per 100,000 for each year. Here again we have no comparable data on case finding studies on non-college age groups, so that we do not know whether college students are more subject to the disease than other groups of young people. No comparisons can be made with morbidity rates in these age groups in states where tuberculosis is a notifiable disease, since reporting of cases is notoriously poor. It is also very probable that as case finding studies in colleges become more effective, more cases will be discovered. This will proceed to a fairly constant level which then would only be lowered finally as control measures became more effective in other parts of the general population.

It is quite certain that ideal campaigns against tuberculosis will not be reached in many colleges because of limitation of facilities. Such a program will be started at the University of California and Stanford University next year under the auspices of the San Francisco and Alameda County and California State Tuberculosis Associations. This program will comprise histories, physical examinations, and skin tests on 2,000 new students with X-ray studies of positive reactors, tuberculin tests repeated each year for those who reacted negatively the previous year, again followed by X-ray studies of the new reactors, this to be carried on through the 4 years of college and into graduate years of professional schools. Efforts will be made to contact students in this group over a 10 year period from next fall. In all suspicious cases there should be careful clinical follow-up. This study and follow-up procedure can be carried on with greater effectiveness in Student Health Services than among the general population because of the ease with which contacts can be made with student patients.

SUMMARY

During our span of life we each pass through certain periods when tuberculosis is to be specially feared. Tuber-

culosis is pertinently a problem of the ages from 15 to 44 as shown by a study of the death rates, and is especially to be feared in the years of late adolescence and early maturity—the college age. Realizing that people of college age are particularly susceptible to the disease and that disability in college students represents a peculiar economic loss, college administrators, through facilities for the care of student health, are concerned with the inauguration of control measures among college students. The American Student Health Association has accepted the challenge and by means of a central tuberculosis control committee has set up and recommended for adoption by colleges a program of case finding. During the 2 years in which this plan has been operating many colleges have reported progress while fairly complete surveys including histories, physical examinations, tuberculin testing, and X-ray studies of positive reactors with follow-up of suspicious cases have been reported by some. A review of the progress of this work with the preliminary findings has here been reported. Results indicate that there is a considerable variation in case incidence in colleges in different parts of the country and that there is some variation by sex and age. It appears that almost 10 times as many cases have been found in colleges where control programs are being conducted than in colleges where no methods of early identification are being used. The value of the case finding surveys and attention to contacts and to suspicious cases in follow-up is here revealed. It is hoped that more thorough programs will soon be instituted in many colleges and that the results of such studies will lead the way toward similar methods of control in young adults in our industries and in our communities.

DISCUSSION

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IF the Student Health Services of our universities are properly to safeguard the physical welfare of the students as well as to act as the practical health educator to our future community leaders, their tuberculosis problem must be handled in the fashion of today, not from the knowledge and methods of the past.

Those of us interested in tuberculosis are indeed remiss in having failed to get over even to the general medical public our modern thought of this problem. I refer to the necessity of tuberculin tests plus X-ray of the positive reactors. This well accepted procedure has certainly not been used by medical men in general in their daily work, and only in a relatively few University Health Services. Tuberculosis is still the disease that kills the greatest number during the productive years of life. We preach early diagnosis for curability and yet 80 per cent of our cases are far advanced when first seen, and this percentage would be higher if we left out the primary pleural effusions.

We have progressed beyond the stage of treatment of the easily recognizable disease by virtue of symptoms and positive findings on routine physical examination. A study by Sampson and Brown [1] on 1,367 consecutive admissions shows the following with reference to their five diagnostic points.

The significant part of these figures to me is that 3 out of 10 of these cases of tuberculosis sent for sanatorium

Tubercle bacilli	61.5
Râles	68.5
X-ray	99. +
Hemoptysis	33.5
Pleurisy	12.0

treatment could not be diagnosed by the use of routine physical examination alone. This fits in with our own experience, and if we considered merely early lesions the difference would be far greater.

The matter of cost—particularly of X-ray film—is probably one of the most potent forces in preventing widespread use of the tuberculin plus X-ray studies of students. Budgets are not very flexible, especially when revised upwards.

For some years we have used, to our complete satisfaction, in private work, in clinic and hospital, fluoroscopic X-ray to separate positive from negative chests. This of course greatly reduces the costs. With the Patterson B. screen and a good tube and transformer, the technic is greatly simplified. The report of Fellows [2] was interesting to us in amply confirming these facts from quite a different point of view. I would commend the earnest study of his presentation to you. We have taught a number of younger men to handle the fluoroscope readily for this purpose and have just completed a fluoroscopic survey of 2,000 high school seniors using a portable fluoroscope. This worked very well.

I must tell of a talk just the other day with Dr. Walter M. Dickie, who for years was Secretary of the California State Board of Health. We were leaving a meeting of our local tuberculosis association when such a study of a university group was under discussion. He pointed out the analogy of this tuberculosis problem at this time to the story of the control of typhoid. It seems that by sanitation and isolation, the typhoid rate was brought down to a low level and there it stuck without change until real effort and true epidemiological technic was brought to bear on the problem by tracing to its source each case when possible. A further marked drop then occurred down to our present level. The analogy seems complete.

If we will look on tuberculosis today as just such an epidemiologic problem and find out definitely by using tuberculin plus X-ray just where infection and disease lie in our college student bodies, we will not only be bringing to bear on this problem the best of modern weapons, but many individuals will be personally benefitted and a fine piece of health education accomplished.

College students are of the age group where we find the disease tuberculosis appearing. For at least 4 years their physical welfare is the responsibility of the Student Health Service. The tools are ready at hand, and tuberculin tests and some form of X-ray are simple in their application.

Let me close with a brief report from Dr. H. D. Lees, University of Pennsylvania. There the plan of X-raying all freshmen was found inadequate after several years' experience. All students are now examined routinely with the tuberculin test plus the X-ray. Of 15 cases examined because they applied for relief of symptoms, 12 were advanced cases of tuberculosis and obliged to leave school. Of 17 cases picked up by the routine tuberculin X-ray plan, all were symptomless and only 1 was dismissed from school.

Whether it be from the strictly scientific standpoint, from the economic or humanitarian, these facts alone would point to the necessity of incorporating these procedures in the routine of each Student Health Service.

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An Experimental Critique of the Allen Method of Evaluating the Bactericidal Action of Antiseptics

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THE status of bacteriological methods for determining the relative values of germicidal agents has been so far advanced during the past half century that many have come to feel that the ultimate solution of the problem lies, not in the field of bacteriology but, as Topley and Wilson have said, "in the domain of the physical chemist." This attitude is reflected in the relative scarcity in recent bacteriological literature of attempts to bring laboratory procedures into closer harmony with conditions encountered in the practical use of antiseptics and disinfectants. For even the phenol coefficient method advocated and employed by the U. S. Food and Drug Administration (Ruehle and Brewer, 1931) with all its good qualities of quantitative precision and controlled factors cannot pretend to approximate ordinary conditions of bacterial contamination and infection.

Among the few reports along this line which have appeared is the work of Allen (1929) and of Allen and Wright (1931). In the first of these papers a method is described in which the relative values of antiseptics are determined by the rapidity with which they appear to kill organisms on the surface of slant agar cultures. Results obtained by this method are given for tests made in duplicate with 21 antiseptics against 4 widely different species of bacteria. The second paper is largely in the nature of a discussion of methods of determining the value of antiseptics; and it includes a brief review of Allen's original method, with certain modifications which are aimed at more accurate standardization of the technic. Unfortunately, no experimental data are included in this second paper to show the worth of these modifications.

On the ground that the surface of an agar slant culture more nearly resembles contaminated or infected tissue than does the liquid suspension used with the Food and Drug Administration method, Allen and Wright contend that data obtained by their procedure are of greater practical significance. Even the admission of Allen that his "method of determining the bactericidal values of antiseptics is open to criticism" has not called forth any published statement to support or refute the claims made for it. The aim of the present work was to examine this technic experimentally, with a view to determining what, if any, promise it holds as a practical method.

METHODS

The procedure which was first reported by Allen will be referred to in this paper as "Allen's Original Method," and the modified technic de-

scribed by Allen and Wright as "Allen's Modified Method." Parts of each paper are quoted.

Allen's Original Method—"The organisms used were a freshly isolated strain of *Staphylococcus aureus*, a similar strain of *Bacillus pyocyaneus*, and laboratory stock cultures of *Bacillus subtilis* and *Bacillus typhosus*. Preliminary to the actual experimental work, each culture was transplanted for 5 successive days on agar slants. Immediately preceding experimentation, 2 fresh transplants were made from the 5th daily culture to agar slants. These were labeled B and X, while the parent culture was labeled A. Culture X served as a control of growth; A was a 24 hour old culture, while B was a freshly inoculated slant. Twenty-one such groups were made up, using each of the 4 organisms employed.

"To each of the 21 A and B groups of the 4 cultures, a different antiseptic was added in such quantity that when the culture tube was held in the vertical position, the slant surface was entirely covered by the antiseptic solution, insuring continuous contact of the agar slant surface with its culture and the antiseptic. At intervals of 15, 30, 60, and 180 minutes, transplants were made from the A and B tubes to fresh agar slants A′, A″, and B′, B″, etc. A previously flamed platinum loop was inserted into the supernatant antiseptic fluid, down to the agar surface, where the loop was drawn across the agar slant surface with its bacterial covering. This loopful of suspension was withdrawn through the antiseptic fluid above and streaked on a fresh agar slant. These tubes plus the original were incubated at 37° C. for 24 hours and then observed. . . . The agar was the usual meat infusion agar titrated to a pH of 7.4."

Allen's Modified Method—"Organisms of known virility and resistance to phenol according to the classification of Reddish are used. They are transplanted for 3 successive days on agar slants of the following composition: Armour's peptone, 10 gm.; Liebig's beef extract, 5 gm.; salt, 5 gm.; agar, 15 gm.; distilled water, 1,000 c.c., adjusted to a pH of 6.8. Five c.c. of the agar is placed in each of the usual 5/8" by 5 7/8" lipped test tubes and autoclaved at 20 lb. pressure for ½ hour. Immediately on removal from the sterilizer the tubes are set at an angle of about 15° to the horizon to insure as nearly as possible even and equal slant surfaces, and also to prevent the formation of the undesirable water of condensation which results from the usual remelting and recooling method of preparing the slants.

"From the 3rd successive culture a fresh sub-culture (known as A) of each organism to be used, is made as follows: With a straight nichrome needle, a smear, or at least three streaks, are made on a fresh agar slant (A). This is incubated at 37.5° C. for 24 hours. At the expiration of this time, 10 c.c. of the antiseptic to be tested is added to the culture (A). This should be adequate to cover the slant completely when in an upright position. The antiseptic is added at a temperature of 37.5° C. Thenceforth the cultures are maintained at the same temperature by means of a water bath. At intervals of 5, 10, 15, 30, and 60 minutes, transplants from the cultures (A) are made on fresh agar slants (B) or Petri dishes (medium as previously described) as follows: With a straight nichrome needle a transplant is removed from the surface of the agar slant (A) and at least 3 streaks made on the fresh agar (B). This (B) is incubated at 37.5° C. for 48 hours and then read.

"Subcultures (C) are made from all transplants (B) in which there is doubt as to the presence of growth of the organisms."

Present Methods—With the few limitations noted below, the general methods employed in this work are those already quoted. Experimental modifications will be mentioned in discussing the data.

Staphylococcus aureus (Reddish strain), *Pseudomonas aeruginosa* (N. Y. U. strain) and *Eberthella typhi* (Hopkins strain) were used throughout as the test organisms. When tested according to the U. S. Food and Drug Administration method of determining Phenol Coefficients at 20° C. they resisted phenol concentrations of 1:70, 1:80 and 1:90, respectively, for 5, but not for 10 minutes. *Bacillus subtilis* was not employed, because it is a spore-forming organism and, therefore, offers serious difficulties in experiments of this kind.

Ten of the 21 antiseptics reported by Allen in 1929 were used. They are listed in Table I, 6 under their customary names, and 4 by numbers.

It was impossible, of course, to know

TABLE I

Antiseptics	*Concentration*
Phenol	1:1000, 1:100, 1:50
Ethyl alcohol	1:1.25 (80 per cent)
Mercuric chloride	1:1000
Dichloramine T	1:20 (soluble portion)
Hydrogen peroxide	Market product; full strength
Tincture of iodine	U. S. P., full strength
Solution No. 7	Well known trade products
Solution No. 8	
Solution No. 9	
Solution No. 10	

the composition of the "usual meat infusion agar" used in Allen's Original Method. We employed the standard beef infusion agar, which contained the fresh extract of 500 gm. of lean beef per 1,000 c.c. medium, 5 gm. of Bacto-peptone (0.5 per cent), 5 gm. of sodium chloride (0.5 per cent), and 15 gm. of Difco-agar (1.5 per cent). The pH was adjusted to 7.4–7.6 before the addition of the agar.

In all experiments other than those dealing with Allen's Original Method the medium recommended in Allen's Modified Method was employed.

EXPERIMENTAL

TESTS MADE ACCORDING TO ALLEN'S ORIGINAL AND MODIFIED METHODS

In order to determine what degree of accuracy may be expected from both the original and the modified method of Allen, three series of tests were conducted using both of these procedures. The technics described by Allen were adhered to. Where the published directions lacked completeness, the points in question were elucidated in a personal communication from Dr. Allen. Perhaps it should also be emphasized here that these experiments had, as their real purpose, evaluation of the methods, rather than of antiseptics.

Because the data collected are of such volume as to forbid publication, even in tabulated form, the results are presented here in more or less condensed, commentary form.

1. Considering each culture tube subjected to medication as the unit test, it was found that 20, or about 9 per cent, of the 216 tests made according to the original method showed irregularities or skips (negative sub-cultures followed by positive sub-cultures at a later time interval) within themselves. Eight skips (8 per cent) occurred in the 97 tests made according to the modified method. While these numbers are not in themselves of sufficient magnitude to constitute a very serious fault, a study of specific instances shows that the nature of these irregularities is particularly annoying and undesirable. For example, the 24-hour culture of *Ps. aeruginosa* exposed to phenol (1:100) in a test made according to the original method, showed no growth in transplants made at intervals of 30 and 60 minutes of exposure, while after 15 and 180 minutes growth did occur. An illustration of a similar situation occurring in tests made according to the modified method is to be seen in the case of a 24 hour old culture of *Staph. aureus* which was subjected to ethyl alcohol (1:1.25). Transplants made at intervals of 5, 10, 15, and 30 minutes after medication showed no growth, but at the end of 60 minutes the organism was recovered. In these cases, as with all questionable results, further sub-cultures were made, to determine the presence or absence of the original test organism. Almost any one of the other tests in which skips occurred could be used to illustrate this defect which, as will be shown later, is largely inherent in the method.

2. A comparison of the three series of tests with each antiseptic made according to both technics showed that complete agreement of results was obtained only when no growth occurred in sub-cultures at any of the four time intervals, or when it occurred in all. In other words, when complete killing or marked reduction in the number of living cells took place between the time

of the first and last transfers, the results varied so widely that it was impossible to assign any definite values to the antiseptics. Obviously, this type of discrepancy imposes serious limitations on the test; for, if it is not reproducible little can be gained by its use. The fact that the series of tests with the Original Method were carried out at room temperature (22–25° C.) in accordance with Allen's directions (personal communication) has perhaps contributed to these variations. However, it should be stated that tests with the modified method in which the temperature was held constant were not free from this error.

3. The data obtained by us are by no means in accord with those presented by Allen for supposedly similar tests. While the much overworked "personal equation" may be a factor, it is impossible to explain all of the differences between his and our own results on this basis. In our work, 0.1 per cent phenol showed no killing action on any of the test organisms when they were exposed for 3 hours at room temperature, and on one occasion viable organisms were recovered even after 24 hours of exposure. Allen reported, however, one set of data in which he did not recover viable *Staph. aureus* or *Ps. aeruginosa* after exposure of more than 1 hour, and *E. typhi* after an interval longer than 30 minutes, when 24 hour old cultures of each were exposed to this concentration of phenol. Granting that his results were obtained with different strains of bacteria from those used here, it scarcely seems compatible with common knowledge of the properties of these organisms to assume that any authentic strains should show such extreme susceptibility. Since no certain explanation presents itself, this point must be accepted simply as further evidence of the unreliability of the method.

Although Allen's Modified Method appears somewhat more satisfactory than his Original Method, it too exhibits the same fundamental defects of irregularity and lack of reproducibility. Consequently, the criticism presented above may be considered to apply equally to both technics.

A CONCEALED FACTOR RESPONSIBLE FOR SOME OF THE DISCREPANCIES

Having tried unsuccessfully to show that the lack of uniformity in results could be attributed to variations in temperature, failure to distinguish between growth and debris carried over from medicated cultures to sub-cultures, mechanical variations in making transfers, and a number of other possible factors, it was thought that perhaps the medicated agar slant cultures themselves were responsible for the lack of uniformity.

To test this possibility duplicate infusion agar slope cultures evenly covered with the 3 test organisms were subjected to 2 per cent phenol at 20° C. Transfers were made according to Allen's Original Method, except that at each time interval 2 sub-cultures were inoculated from each medicated culture instead of 1. The inoculum for the first was taken from the upper half, but not the extreme tip, of the slant, and for the 2nd from the lower half near the base of the sloped surface. When these pairs of sub-cultures were observed after 24 hours incubation at 37° C., and rechecked after a 2nd day of incubation, the results recorded in Table II were obtained. When sub-cultures were inoculated with material taken from the upper parts of the medicated slopes of *Staph. aureus*, *Ps. aeruginosa* and *E. typhi*, the only transfers in which growth occurred were those made from 24 hour cultures of *Staph. aureus* at the first time interval (15 min.). In sharp contrast to these results, the transfers made from the lower portions of the same medi-

TABLE II

VIABILITY OF INOCULA TAKEN FROM UPPER AND LOWER PORTIONS OF SLANT CULTURES MEDICATED WITH 2 PER CENT PHENOL

Test Organism	Tube No.	Portion of slant from which inoculum for sub-cultures was taken	Hours of Incubation Before Exposure to Phenol: 24 Expos. in Min. 15	24 Expos. in Min. 30	24 Expos. in Min. 60	24 Expos. in Min. 180	0 Expos. in Min. 15	0 Expos. in Min. 30	0 Expos. in Min. 60	0 Expos. in Min. 180	C
Staphylococcus aureus	1	Upper	+	—	—	—	—	—	—	—	+
		Lower	+	+	+	+	+	+	+	+	+
	2	Upper	+	—	—	—	—	—	—	—	+
		Lower	+	+	+	+	+	+	+	+	+
Pseudomonas aeruginosa	1	Upper	—	—	—	—	—	—	—	—	+
		Lower	+	+	+	+	—	—	—	—	+
	2	Upper	—	—	—	—	—	—	—	—	+
		Lower	+	—	+	+	+	+	+	+	+
Eberthella typhi	1	Upper	—	—	—	—	—	—	—	—	+
		Lower	+	+	+	+	—	+	—	—	+
	2	Upper	—	—	—	—	—	—	—	—	+
		Lower	+	+	+	+	+	+	+	+	+

Legend: + = Growth
— = No growth
C = Control

cated 24 hour old cultures showed growth even after 3 hours of exposure. The fact that the freshly inoculated slants showed a similar trend would seem to indicate that probably some external physical factor, rather than any actual difference in resistance of the organisms, is responsible for these results.

For the sake of brevity, only the limited data presented above can be included here, but care was taken to extend the investigation of this point to repeated tests with Allen's Original Method and Allen's Modified Method, and with the use of 8 antiseptics, in addition to phenol. The more or less general agreement of these experiments in showing a marked difference in length of time required to kill the organisms on the upper half of an agar slant as compared with that required to destroy those at the base of the same slant can leave little doubt about this physical factor being of general importance in interpreting the faulty results obtained by Allen's technic. Since his directions make no restrictions as to what portion of the slant the inoculum should be taken from, the operator is at liberty to pick indiscriminately from the upper or lower portions. If by choice or by chance he takes the inoculum from the lower part at the first and last time intervals, and from the upper portion at the end of

the intermediate periods, he will be very apt to observe growth only in the first and last sub-cultures. Should he repeat the same test, it is quite probable that he would not transfer from the same areas at the same time intervals, and would thereby get a set of results which differ from the first set. Also, a technician knowing this trick could, within limits, vary the results to suit his fancy.

While the above comments do not entirely explain the difficulties encountered, the point stressed appears to us to constitute a sufficiently serious objection to Allen's technics to lay data obtained with them open to serious question.

A FURTHER MODIFICATION OF ALLEN'S METHOD

The central idea upon which Allen's method is based is that the bactericidal action of antiseptics upon organisms matted on the surface of an agar medium more closely resembles the ability of these agents to destroy bacteria in contact with the animal body than does the action exerted against the naked suspensions of organisms used in the standard Food and Drug Administration method. Although an agar gel can scarcely be considered as an adequate substitute for living tissue, this effort is certainly a move in the right direction.

Having demonstrated that the procedures recommended by Allen do not give satisfactory results, an attempt was made to incorporate the agar culture idea into a test sufficiently simple and accurate to make it practical. To this end a variety of experimental modifications was employed. Because most of these were found to be without any real merit, they are not included in this report. However, from the experience gained in these investigations, it was possible to evolve a modification which shows some promise and appears to be no more faulty than some of the present accepted technics. A description of this procedure is given here.

Tubes containing 5 c.c. of the agar recommended in Allen's Modified Method are prepared and, after sterilization, are allowed to solidify in an upright position so that the flat surface of the medium is at right angles to the walls of the tube. These tubes are inoculated with 0.1 c.c. of a 24 hour-old broth culture of the desired test organism, which had been transferred serially on the 5 preceding days through broth of the same composition as the agar medium before the agar is added. The inoculum must be spread evenly over the surface of the medium. The agar tubes are incubated for 24 hours at 37.5° C. Ten c.c. of the germicidal agent to be tested are then introduced into the culture tubes by allowing the liquid to run down the side of the tube in such a way as not to disturb the bacterial growth on the surface of the agar. The medicated cultures are held in a water bath at the desired constant temperature (37.5° C., in our tests). At given periods of time (usually 5 minute intervals) transfers are made to 10 c.c. of sterile broth by means of a 4 mm. nichrome loop which is so bent that a 90° angle is formed at the juncture of the loop and the straight wire shaft. The flamed and cooled loop is passed through the germicidal solution to the surface of the agar without penetrating the medium. Sufficient bacterial growth to be easily visible is gently scraped from the surface onto the needle, which is then carefully withdrawn and the inoculum deposited in the receiving broth. The broth tubes are incubated for 48 hours at 37.5° C., and subjected to careful observation for evidence of growth.

Table III may serve to illustrate what may be expected of this procedure

TABLE III

RESULTS OBTAINED BY A FURTHER MODIFICATION OF ALLEN'S METHOD, USING 1:80 AQUEOUS PHENOL

	Staph. aureus						*Ps. aeruginosa*						*E. typhi*						*Controls on growth (even test no.) and sterility (odd test no.)*					
	Minutes of Exposure																							
Test	5	10	15	20	30	60	5	10	15	20	30	60	5	10	15	20	30	60	5	10	15	20	30	60
1	+	+	+	+	+	+	+	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−
2	+	+	+	+	+	+	+	−	−	−	−	−	+	+	−	−	−	−	+	+	+	+	+	+
3	+	+	+	+	+	+	+	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−
4	+	+	+	+	+	+	+	−	−	−	−	−	+	−	−	−	−	−	+	+	+	+	+	+
5	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
6	+	+	+	+	+	+	+	+	−	−	−	−	+	+	−	−	−	−	+	+	+	+	+	+

Legend: + = Growth — = No growth

in the way of constancy of results when the technic is carefully carried out. These data have been obtained by subjecting 6 cultures each of *Staph. aureus*, *Ps. aeruginosa* and *E. typhi* to 1:80 aqueous phenol. The 3 control tests in which no growth occurred represent sterile agar tubes subjected to phenol, while the 3 controls showing growth are cultures of *Staph. aureus* subjected to 10 c.c. of sterile water. From these results it will be seen that no skips occurred in any of the tests and that, while the killing time in each of the 6 series of tests was not identical, in no case did it vary by more than one 5 minute interval from the average.

Considerable doubt is felt as to the advisability of presenting the above modified procedure, because the work done on this phase of the problem has been quite limited. Nor is it our intention to present this procedure as a substitute for, or supplement to, the generally accepted Food and Drug Administration Method. We believe, however, that it may be of scientific interest, and that in its present or further modified form, it may be of some value in the evaluation of antiseptics under more nearly practical conditions than most methods have admitted.

SUMMARY

Repetition of the procedures recommended by Allen in 1929, and Allen and Wright in 1931, for evaluating antiseptics has shown that because of skips and lack of repeatability these methods are unreliable. A major portion of the faults of these technics may be attributed to the fact that organisms on the lower portion of a medicated agar slope are less readily killed than those on the upper portion.

Although the results presented here indicate that little significance may be attached to the two methods of Allen, and to his reported data, they do not necessarily imply that the principle of determining bactericidal action of substances upon organisms growing on an agar surface lacks merit. The presentation here of a further modification of the agar culture technic is based on limited observations. It does, however, appear to obviate some of the difficulties of Allen's methods.

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Relative Toxicological Effects of Synthetic Ethanol and Grain Fermentation Ethanol in Blended Whiskies

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SINCE the repeal of the 18th Amendment to the Constitution and the legalizing of the use of alcoholic liquors, the question of blended whiskey has again aroused interest. Prior to the advent of prohibition, the alcohol used in the preparation of blended whiskies was produced largely through the fermentation of grain-mash. Smaller amounts were produced by the fermentation of blackstrap molasses. Today, the most economical source of fermentation alcohol is probably molasses. The synthesis of ethyl alcohol from ethylene has been known to organic chemists for a long time, but this process has only quite recently been developed on a technical scale of production, utilizing the gases resulting from the "cracking" of petroleum. The ethylene from this source is combined with sulphuric acid to form ethyl sulphuric acid. This, in turn, is hydrolized with alkali to produce ethyl alcohol. This synthetic alcohol is now obtainable in large quantities in a very high degree of purity, at prices which compare quite favorably with fermentation alcohol.

These studies were undertaken to determine whether there was any detectable difference in the intoxicating or toxic properties of alcohol produced by grain fermentation and that synthesized from hydrocarbons, and, furthermore, to compare their effects when used in blending whiskies.

TESTS OF COMPARATIVE EFFECTS OF SYNTHETIC AND FERMENTATION ALCOHOL

The samples of alcohol employed were purchased on the open market and were found to correspond to the requirements of the United States Pharmacopoeia. The fermentation alcohol was stated by the manufacturer to have been prepared from grain. It contained 94.94 per cent ethyl alcohol and 5.06 per cent water, by volume. The synthetic product contained 95 per cent ethyl alcohol and 5 per cent water, by volume. When the U.S.P. tests were applied, both specimens gave negative reactions for fusel oil constituents, acetone, methanol, and aldehyde. It can be stated from the chemical tests that these were both samples of the constant boiling mixture of ethanol and water, which constitutes the common 95 per cent alcohol employed in pharmacy.

Animal experiments on alcohol from these two sources have been conducted in other laboratories and will be reported elsewhere. The tests reported herein were made entirely upon humans. Fifteen male subjects were employed. They ranged from 22 to 51 years of age. Of these, 6 were medical students,

4 were engaged in light labor, and 5 in heavy labor. They were classified on the basis of previous experience with intoxicating liquors, as (1) abstainers, (2) moderate drinkers, and (3) heavy drinkers. Subjects were required to abstain from all alcoholic beverages during the 48 hours preceding the test, and to report early in the morning without having eaten breakfast.

The dose of alcohol was gauged according to the weight of the subject and the reported previous experience with alcohol. Abstainers were given 0.5 c.c. absolute alcohol per kg. body weight, moderate drinkers received 1.0 c.c. per kg., and heavy drinkers received 1.5 c.c. per kg. In each case, the alcohol was diluted to 10 per cent strength with cool water. The subject was required to drink one-tenth of this diluted dose during each 3 minutes over a 30 minute interval.

Two tests were conducted upon each subject—one employing diluted fermentation alcohol and the other using synthetic alcohol. The bladder was emptied at the start of the experiment to furnish a control specimen of urine. Urine specimens were collected at 45, 90, 120, 180, and 240 minutes after completely drinking the alcohol dose. Subjective symptoms, as well as objective observations of alcoholic intoxication or any of the accompanying complicating factors such as nausea, headache, etc., were noted during the period following the drinking.

On the doses employed, the subjects reached varying stages of intoxication, ranging from a feeling of fullness in the head to a drunken stupor. The peak of the objective response, as well as the maximum concentration of alcohol in the urine, was reached at about 45 minutes after completion of the drinking. The average maximum concentrations of alcohol of the urine were 0.9 mg. per c.c. for the group of abstainers, 1.25 mg. per c.c. for the group of moderate drinkers, and 1.65 mg. per c.c. for the group of heavy drinkers. In duplicate experiments, no real difference could be observed between the response to ethanol from the two sources (grain fermentation and synthetic).

EXPERIMENTS ON THE EFFECTS OF 4 YEAR OLD KENTUCKY BOURBON WHISKY BLENDED WITH 50 PER CENT ALCOHOL

Specimens of Kentucky Bourbon whisky (aged 4 years) were blended by expert blenders using in one instance 50 per cent grain fermentation alcohol and in the other instance synthetic alcohol. The blended products were adjusted to a final alcohol content at 50 per cent by volume (100 proof). So far as fusel oil content, aldehydes, esters, and acidity were concerned, the content of both blended whiskies were much lower than the straight bourbon whiskey which was used. The analyses of the two blended whiskies were essentially the same.

Employing the same 15 human subjects used in the alcohol tests, similar experiments were conducted using these two blended whiskies. In calculating the dose for each individual subject, the amount of whiskey necessary to give a maximum urine concentration of 1.5 mg. alcohol per c.c. was estimated. In this way an attempt was made to rule out individual susceptibility to alcohol and to make all the subjects equally intoxicated. Based upon previous experience in the alcohol tests, this result was fairly well approximated. The various subjects all became quite intoxicated, although they varied materially in the manner in which this intoxication became manifest. Some became drowsy and fell asleep; others became sullen and morose; others were emotionally excited with fits of hilarity, singing, weeping or combativeness. Observations were made to note any differences between the two whisky

blends in each of the subjects—not only with respect to the acute effects but also for any material differences in the chronic effects ("hangover") such as headache, nausea, etc. So far as could be determined, the effects of the two blended whiskies were identical.

SUMMARY

The effects of drinking diluted ethyl alcohol from two sources, (1) grain fermentation, and (2) synthesis from ethylene, have been studied in 15 human subjects. Alcohol from these two sources blended with 50 per cent of 4 year old Kentucky Bourbon whiskey to give 100 proof blends, have been studied in same series of subjects. No difference in intoxicating effect nor in immediate after-effects ("hangover") could be noted in the effects of the alcohols nor in the whisky blends prepared from them. In their effect upon the human, synthetic ethyl alcohol is identical with ethyl alcohol produced from the fermentation of grain.

What Is Public Health?

IS not public health merely a matter of water supplies, ventilation, sewage, clinics, drains, street cleaning, garbage, infectious diseases, public health nurses, flies, dirt, slums, and serums? True it is that these items are all in it. But they no more constitute public health than mere paint, canvas, and brushes constitute art; or mere iron ore and smelters constitute architecture; or rods, lines, and nets constitute the fishing industry; or axes and wire rope constitute lumbering; or schoolhouses and textbooks constitute education. All these items are merely the tools of the arts. The tools of an art are essential to the art; but they do not constitute the art. Art is the result achieved; it is that object toward which tools merely perform the shaping of the path. . . .

That public health originated in the attempt to relieve crude physical suffering and especially to achieve this only by preventing disease, does not take from its present or future immensely greater importance. That it has reached already its present outstanding influence is proof enough of its inherent strength, a strength derived wholly from its truth—that is, its correspondence with, not things just dreamed about, but things that are—not with just some things in the universe but with all things. . . .

The common objective of medicine and of public health is the reduction of human misery due to disease and death. The one devoted itself to the relief and cure of those already suffering, the other to prevention. Since neither fully succeeds, each must continue to supplement the other. Each in its own field has made enormous advances from each its own angle. Coöperation is increasing as each—medicine and public health—understands the other's problems better.—H. W. Hill, M.D., *Weekly Bull.*, Albany, N. Y., Aug. 8, 1935.

The Aims of School Health Service*

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THE aim of a health service in school is obviously to make for a healthier group of children. The effort, which has been carried on through the device of doing things for children, has not been sufficiently successful. It has not been as successful as the magnitude of expenditure of thought, time and money would warrant. The traditional procedure calls for the assumption of great responsibility on the part of the school staff for the health practices of the children. The school has assumed responsibility for the control of communicable diseases, for the detection and correction of physical defects of the children. When there has been danger of diphtheria or smallpox the school vaccinated and immunized the children. The cases of communicable diseases occurring in the group have been detected, diagnosed and excluded by the school staff of teachers, nurses and physicians. Physical defects have been detected and, at times and under certain conditions, corrective work has been carried out, or at least started.

The question has now been raised as to the necessity and the advisability of carrying on the same procedures year after year in the same manner. Today in most places the same kinds and numbers of physical defects are found by the same kind of physical examinations as thirty years ago. Studies made in New York, Detroit and elsewhere show that only about 2 per cent of the serious physical defects discovered by the medical examiners in school are brought to correction within the year, in spite of the abundance of clinical medical services in these communities. There are 80 to 90 per cent of school children needing dental care, in spite of all the school dental clinics that have been operated. Each year in many schools it is necessary to vaccinate and immunize against diphtheria the same percentage of children as in the past in order to bring the protection level up only to a point where the health authorities hope that there will not be an epidemic, or that there will not be deaths from these diseases.

These questions are being asked not for the first time, but more insistently than ever before. An answer is more important in these days of readjustment than in the days of expansion.

A child presenting himself at school with an uncared for physical defect, or without the common, accepted, protective immunizations represents not what was once thought, but very likely an entirely different problem. The question is not one of a particular child being neglected. It is not a problem for which an answer is secured by having a physical defect corrected or immunization done. It is not as simple as that—for if it were it is only reasonable to assume that there would, at least in certain parts of the country, have been some signs of a permanent solution to the problem. Defects have

*To be read at the meeting of the American Association of School Physicians in Milwaukee, Wis., October 9, 1935.

been corrected—and yet our problem is as great as ever. We cannot measure the success of any school health service program by the number of defects corrected or the number of children immunized by the school. These things rather measure the failures of the community health program. Why should any parent or any community allow such conditions to go on year after year? Why should parents wait until the most susceptible age period for diphtheria has passed before administering toxoid? Why should a health department allow a full fifth of its entire population and its most susceptible age group (the preschool group) to go unvaccinated? Is it good medical practice to allow such physical conditions as progressive myopia, congenital syphilis, rheumatic heart lesions, focal infections of teeth and tonsils, and similar other progressive conditions to go on year after year without active and continuous medical treatment? Yet are not these the very conditions that we find in our schools? If the traditional school health service has not directly contributed to this state it has at least been of little avail in correcting it.

There is another thought that serves as a challenge to school physicians. Let us consider the group that has left our schools and attempt to analyze its thinking in respect to medical services. The high school student has for 12 or more years been given certain medical services. In most places, rural and urban, he was vaccinated by the school doctor, he was given toxin-antitoxin or toxoid, Schick tested, given a Dick test or Dick toxin. Each year, or at least every 3 years, in the more progressive schools he was given a physical examination, and recommendations were made to him and his family as to what should be done about the defects found. He was protected against exposure to communicable diseases through the action of the school staff. In other words for more than a decade of life the school child is taken as a ward of the state in respect to medical care. He is taught to turn to and depend upon the school teacher, nurse, and physician for all his essential medical advice and even service. Not only is he taught to depend upon this staff for the things that need to be done, but he is taught to lean upon them for knowledge and information as to whether anything needs to be done. All health factors of the school child, both those that are a credit to the child and those that are considered detrimental, are motivated by, detected and appraised by the school. The child has little opportunity to play anything but a most passive part. As a result of this sort of education we cannot expect to find a high school graduate well trained in that phase of good citizenship that has to do with the preservation of health. Upon leaving our schools there is no one upon whom he can lean. There is no longer a school doctor and nurse to tell him that he is right or wrong. During these years in schools there has been little or no attempt to point the way he should go after leaving. This point is not lost sight of in the more traditional parts of the school curriculum. Health education when carried out under that name attempts to do the thing that is desired, but the service side of the program almost always directly violates the teachings of the educators and children are not taught how to care for themselves. It has never been demonstrated that there is any educational carry-over value to doing a thing for a child. He must learn how to do it himself. This is accepted by all educators. Yet we have attempted the educationally impossible in health. We have tried to teach our school children to be good citizens, to care for themselves, to help preserve the health of

the nation, and the race, through the process of having all the things that have been mentioned done for him. We have done our best to teach the public the very opposite from that which seems to be most desired—continuous medical services intelligently sought and capably administered.

When a child enters school with a physical defect which has not been, but should be, corrected there is a real problem presented to the school health authorities. Here is a challenge to the educational forces of the community. This child represents a problem in either individual or community health education, or possibly both. The mere detection or correction of the defect does not alter the fundamental condition that allowed for the persistence of an uncorrected defect. The problem, if individual, may be one of education of that child's family. It is usually found that the parents are lacking in appreciation of the need of medical care, or having this they are lacking in the knowledge of how to secure the care that they know to be needed for the child. Either one or both of these may be present—and either one or both should receive the attention of the school health authorities. The correction of these lacks of knowledge automatically takes care of the correction of the defect in the child. But the effects are more far-reaching than this immediate objective. Having learned the need, the advantages, and the method of securing medical care for one member of the family for a particular reason it is not too much to expect this lesson will have a carry-over value and in the future the health of the entire family unit will be better cared for in other respects.

At times the fault does not lie with the individual family. It must be admitted that under certain conditions the family may have a proper appreciation of a continuous medical service but be totally unable to secure such care for purely financial reasons. Then the fault is one of community health education. Those school health authorities who busy themselves only with the particular child, and his isolated defect, follow a very short-sighted policy. They miss the bigger opportunity. Every effort must be used to awaken the civic leaders to their responsibility. The school is an admirable situation to elicit and direct public action to care for the well-being of the entire population. The civic and medical leaders should have pointed out to them the fact that there are not sufficient medical facilities available for all classes of people. Under proper stimulation and guidance the community then will go a long way in correcting this fault of community health education.

Here then, we have our problem. The school health service program of the past has not been an effective device for the education of either the particular child or of the community as a whole. Year after year the school has been presented with the same old problems and has had new ones added as time went on. People have not been taught to use their own initiative in securing either corrective or prophylactic medical care. They have not become acquainted with the medical facilities and practices of the present day, nor have they learned the method of using them to the best advantage.

This problem is one of education. It calls not so much for new forces and new efforts but rather for a re-direction of the old efforts and a new thinking. The examination of the school child no longer needs to be a fact-finding device. The experiences of the past third of a century of school medical work afford sufficient evidence to prognosticate the percentages of defects in almost any age group. It is better that the examination be used as a personal demonstration to the child's own par-

ents of the need of medical care. The school physician, having demonstrated the need of care, can then point out to the parents at the same time the means of obtaining that care. This means will vary with the individual child and the particular community and its facilities.

Further than this, when the health forces of the community fully appreciate the health problems of the school child as they exist today and when the community learns to meet the problems, then there will be need for less and not more medical work in schools. When the parents of school children have learned the advantages and means of giving continuous medical supervision to their children during the periods of infancy and preschool life, when children enter school protected against communicable diseases, with defects corrected or prevented, with health habits properly directed, then the school physician will have a different rôle to play—that of the educator alone.

But the education of the parents is not sufficient. The medical forces of the community must also be stimulated. The entire blame for the appalling findings recorded by any school physician cannot be laid solely at the door of the parents. Too frequently the medical profession itself has been indifferent to the problem and has assumed that all the necessary things would be cared for when the child entered or was about to enter school. Not only must the parents be brought to the school to have a demonstration of the need for medical supervision of childrens' health but so, too, must the physicians. What then is more logical than to have the practising medical fraternity make the examinations, conduct the demonstrations and give the education relative to the methods of securing the indicated care. If each physician practising in a community could serve as a school physician it is only reasonable that with proper guidance and supervision he would then translate his school experiences in terms of his own practice. The schools then would serve not only the parents, but also the physicians.

In order to gain these ends and in following out these ideas Detroit during the past 12 years has radically departed from the practices of most other communities. Diphtheria immunization has been discontinued as a school problem. For 7 years none of this work has been done in school. The time, efforts and money that would otherwise be spent on this have been directed towards teaching the people to go to their personal physicians for this service at the time of life when the child is most in need. As a result no school has less than 65 per cent of the children protected before they enter the kindergarten.

No school physician serves on the health service staff for a period greater than 2 years. During this time each is given an insight into the services that the schools expect to have performed for the children long before they enter. Instead of a small staff of full-time physicians doing the necessary work, as many as possible are employed through the system of decreasing the hours each serves.

Another departure from the usual is in the matter of physical examinations before or shortly after entering school. Each school nurse and all other public health nurses carry and distribute examination blanks to all parents with whom they come in contact during the year. If the child is of school age, or shortly is to enter school, the parents are instructed to return the blank to the school. But always it is impressed upon the parents that this is a res[illegible] bility of theirs—it is they wh[illegible] see to it that the child has a [illegible] health examination. This same examination blank is used for all grades

and all age levels. Two out of 3 of all the physicians of the city filled out such blanks during the past school year.

There has been an attempt to set up a system that will direct the attention of the child and the community away from the school in matters pertaining to health service. An effort is being made to have all possible protective services rendered during the earliest periods of life before the school age. People are being taught to turn to their own physicians for health guidance for all age levels. School children are being guided and trained in health practices that will not of necessity end with the formal school period. The coöperation of the practising physicians in this move is obtained for it is they who actually do the work. The plan is feasible and workable, and it is giving the desired results—not only a healthier school child, but a healthier community.

On Immunisation

LASTLY, one final word on immunisation. Personally I find it difficult to believe that active immunisation of the population against every conceivable infection is the last word in prevention of infectious disease, but at the moment we must admit that so far as these personal infections are concerned, it is by far the most potent preventive we possess, and it would be foolish not to make full use of it in appropriate circumstances. Most people are prepared to give the method a fair trial if its purpose is clearly explained to them and the element of compulsion is eliminated. Apart from vaccination against smallpox, which remains the only really effective means at our disposal for combating this disease, one of the most important recent additions to our armamentarium is diphtheria prophylaxis. To anyone contemplating a trial of this method I would emphasise the importance (1) of educating the parents and particularly the mothers as regards its advantages; (2) of enlisting the support of the local medical profession, and in this connection I would refer to the valuable report recently prepared by a committee of the British Medical Association under the chairmanship of Professor Picken, in which the whole question is carefully reviewed; and (3) of concentrating on the younger ages. The age of maximum incidence of diphtheria is six to eight years, and American experience suggests that at least thirty per cent to forty per cent of the children below this age must be immunised to ensure against a serious outbreak.—Presidential Address on Some Aspects of the Problem of the Prevention and Control of Infectious Disease, by Thomas Carnwath, D.S.O., M.B., D.Sc., D.P.H., Deputy Chief Medical Officer, Ministry of Health, *J. Roy. San. Inst.*, Sept., 1935, pp. 94–95.

EDITORIAL SECTION

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WHAT SHALL WE THINK OF SOCIAL SECURITY?

NOW that the tumult and shouting in Washington has died, is it not well for us to hold at arm's length this unprecedented plan of federal aid in states and to seek for ourselves and the health enterprise a calm and detached orientation?

It is quite obvious to all those familiar with attitudes of previous sessions that something new and quite different has been present in the deliberations of this 74th Congress so far as the sentiment toward public health is concerned. Instead of the policy to reduce federal expenditures for public health to the lowest possible level there has come into the picture the President's group for the study of social security. Along with important investigations on old age and unemployment insurance there has been conducted a systematic study of the possibility of expanding local health services through a system of federal aid to states. It is a highly significant fact that this provision for more health service was admitted to be a proper part of a broad program for social security and that it passed through the various stages of congressional consideration with less objection than any other provision of the entire bill. Since the report of the President's advisers on social security there has never been any serious opposition to the plan of increasing funds to be expended through the Public Health Service and the Children's Bureau to an amount vastly greater than has ever before been allowed for these worthy purposes. From this support we may well take fresh courage.

The ample majority of both the House and the Senate in favor of the Social Security Bill leaves no room for doubt as to the real intention of Congress to provide the means and the funds for this important purpose. That the Deficiency Appropriations Bill should have been defeated by a one-man Senate filibuster does not alter the main intent of this Congress to pass these measures and to see them tried out. There is every reason to believe that these new funds will be provided promptly by the session which begins next January and that not only

the very significant old-age and unemployment schemes but the provisions for aid to states for health can be operated during the second half of this current fiscal year.

There is abroad a feeling of disappointment among health workers who have been following the fortunes of this legislation. Instead of this tendency to an easy discouragement with the miscarriage of these plans there should be on the part of the public health profession a renewed determination to be more nearly ready to use these funds when they do become actually available. It still remains to be seen whether the added responsibilities which these millions bring can be used in such a fashion as to bring credit to the profession or otherwise. If through this delay of perhaps 4 months there can be more thorough planning, more adequate study of the principles and the technic of using the money, we may well be grateful that there was that much less haste.

It seems clear that money will be allotted to states only through organized medical bodies, state, county and municipal, and such funds must be expended solely in carrying out the purposes specified in the bill and in accordance with plans prepared by the health authorities of the various states, approved by the Surgeon General of the Public Health Service. It behooves the health authorities of every state, therefore, to perfect their organizations and personnel, and to plan for the useful and economical expenditure of such money as may come from the federal government under this act.

To a very real extent the problem now becomes one of finding the human resources to match the dollars. Wherever high quality human stuff can be found with the necessary technical information we may rest assured that the money will be well spent and that the cause of public health will be advanced through this extraordinary change in federal policy. There are those in high places who have openly predicted that the funds named in the Social Security Bill are too large to be wisely spent with existing facilities and personnel. Others connected with the studies which preceded the drafting of the Bill have urged that funds in an amount twice as large could be safely appropriated for these purposes. Only time will tell which view comes closest to the fact. It is only sure that American public health is to be tested by this new program in a telling way and we may well add prayer and fasting to our earnest endeavors to make this project a resounding success.

Surely we should take a thoroughly constructive attitude toward the disappointing features of the present and make certain that we do not fall back when there is so much obligation on our shoulders to face the future with courage and determination to make of this experiment a vindication of our faith in the cause of public health.

ROYAL SANITARY INSTITUTE HEALTH CONGRESS

THE Royal Sanitary Institute Health Congress was held in July at Bournemouth, England, under the patronage of King George and the presidency of Lord Balfour of Burleigh.

The official representative of the American Public Health Association was George K. Strode, M.D., the representative in Europe of the International Health Division of the Rockefeller Foundation. In his report of the meetings Dr. Strode points out features of this Congress which resemble the meetings of our Association, indicating that on both sides of the Atlantic it seems to be a

fact that personal acquaintance and contact with other professional workers is the most valuable part in such a conference.

At the Bournemouth meetings all papers which are presented in the program for discussion are printed prior to the meetings and copies are placed in the hands of each individual in order to facilitate discussion. Usually the author of the paper presents only a brief résumé, in this way saving the time of the listeners and avoiding the monotony of long papers. There may be those on this side of the Atlantic who will agree that our British confrères have achieved a real advance in this manner.

Dr. Strode points out that in these meetings there was a simplicity and an effectiveness in the program organization which he commends to all those who have the responsibility of setting up meetings of this character. The mornings only of the 5 days of the meetings were used for formal papers and discussion and the afternoons were devoted to features of interest, to formal receptions, and other activities. The medical officers of health, the engineers, the sanitary inspectors and the health visitors each held separate meetings and to these were added meetings for groups interested in subjects comparable to our section plan, but carrying section names which indicate a diversity of interest, such as the Sections on Preventive Medicine, on Architecture, on Town Planning and Engineering, on Veterinary Hygiene, and on National Health Insurance.

Those who are interested in the development of professional standards in this country will do well to inform themselves of the way in which the Royal Sanitary Institute across the years has succeeded in raising the standards in England.

AMERICAN CHILD HEALTH ASSOCIATION

THE passing of the American Child Health Association after 26 years of varied activities removes from the scene a unique organization and punctuates an important era in the development of maternal and child hygiene. This association under its present name was formed by a merger of the American Child Hygiene Association, and the Child Health Organization of America. The former was the outgrowth of the American Association for the Study and Prevention of Infant Mortality, organized at Yale University in November, 1909, as a direct result of a conference on the Prevention of Infant Mortality held under the American Academy of Medicine. Headquarters were established in Baltimore in January, 1910. A devoted and efficient executive secretary was employed who nurtured and developed the organization until its office was transferred to Washington, D. C., in April, 1922. At that time there were almost 2,500 members including 273 affiliated societies. This marked the peak in interest and support of its membership up to that time and the most extensive services the Association was able to render its affiliated societies.

At the Washington, D. C., annual meeting, President Hoover announced formally the consolidation of this association with the Child Health Organization of America. The latter had grown up rapidly after the war under the inspiration of a group of New York people and the forceful leadership of its Director. The program concerned itself largely with health education by arousing public interest in the health of school children and encouraging systematic teaching of health in the schools with the objective of inculcating health habits. Its appeal was largely

through weighing and measuring the children, a daily routine of health habits, and attractive literature appealing to children and adults alike.

After amalgamation, the new Association transferred its headquarters to New York City, leaving a small office in Washington, D. C. An extensive program was launched with greatly expanded budgets and considerable increase in personnel. Under a departmentalized set-up its program included the development of Child Health Demonstrations, Health Education, Medical and Nursing Consultation Services, Research, a Division of Publicity and Publications, and a Division of Public Health Relations. Attention was centered on Health Education, and on Research.

There is no question that this organization exerted a beneficent influence upon the public health by sponsoring the most approved methods for the prevention of maternal and infant mortality; by urging the necessity for better birth registration; by taking an active interest in improving the milk supply, and by popularizing health education for school children. The *Transactions* of the Association are veritable handbooks of the progress in Child Hygiene. Its attractive magazine *Mother and Child,* published for 4 years, followed by the *Child Health Bulletin,* did much to arouse widespread interest in maternal and child hygiene, and to suggest ways and means of meeting local problems. Many of the measures proposed and discussed at meetings of the association have been incorporated in state and local child health work. The schools now recognize health as a major objective of education and health education as an integral part of the school program.

The question arises naturally, why should such an organization close its doors at a time when rapidly shifting socio-economic forces demand skillful guidance in holding what has proved to be sound in the old and developing what is necessary to meet the new.

Does it signify that official health organizations are now in a position to take over largely the health work initiated and sponsored by voluntary societies? Does it mean that child hygiene is now fully recognized as one of the most important phases of the public health and should be integrated with every other health function? If so the omen is propitious. It raises a challenge, however, to other national health organizations remaining in the field to meet the increasing demands of maternal and child health, in national, state, and local units.

AN INTERNATIONAL STANDARD FOR TUBERCULIN

As early as 1924 the Health Committee of the League of Nations requested the late Professor Calmette to study the question of uniformity of tuberculins. He accepted and his results were published in 1926. The employment of the intracutaneous test in sensitized guinea pigs was recommended for the titration.

The Health Committee made arrangements for comparative tests to be carried out in a number of well known laboratories. It was found that the tuberculins used in Frankfort-on-Main, London, Paris, and Tokio were of equal strength, so that it became possible to suggest the adoption of an international standard. This proposal was made at a session of the Health Committee held in Frankfort in April, 1928. The State Serum Institute of Denmark, located in Copenhagen, was selected as a central laboratory from which the standard preparation was distributed. The National Institute of Medical Research, London, offered a certain amount of standard tuberculin for distribution. Later, a standard tuber-

culin was produced in quantity by the Copenhagen laboratory, and since that time the international standard tuberculin has been distributed from that center.

The international standard tuberculin is tested by the shock method in tuberculous guinea pigs and also by the intracutaneous test in man. The guinea pig test is the most expensive and the most unreliable, and when it is possible to use the intracutaneous test in man it is the method of preference.

Efforts are being made in various parts of the world to obtain a better preparation for the international standard. Douglas and Hartley have prepared a tuberculin using a synthetic medium. This has been titrated against the international standard preparation. In America, Long, Seibert, and Aronson have worked out several preparations, and these are still under test. The first preparation produced sensitization, and was abandoned. A more recent preparation giving better results has been made, but still further studies are under way. Whatever the preparation, in the opinion of Madsen and Holm, it should be titrated against the present international standard tuberculin.

This matter, as well as a study of the various methods of making the tuberculin tests, is interestingly treated by Dr. Th. Madsen and Dr. Johs. Holm.[1] Dr. Madsen's position as Director of the State Serum Institute and experience as Chairman of the Health Organisation of the League of Nations assures us that the statements are authoritative.

REFERENCE

1. Madsen, Th., and Holm, Johs. Tuberculin Standardisation and Tuberculin Tests. *Quart. Bull. Health Organisation*, IV, 2:475 (June), 1935.

PUBLIC HEALTH EDUCATION*

What Needs To Be Told—Invaluable source material is given in "The Control of Communicable Diseases," *Public Health Reports*, U. S. Public Health Service, Washington, D. C. Aug. 9, 1935.

This is a revised edition of a report by an A.P.H.A. committee.

Among the definitions of terms is the following:

Education in personal cleanliness. This phrase is intended to include all the various means available to impress upon all members of the community, young and old, and especially when communicable disease is prevalent or during epidemics, by spoken and printed word, and by illustration and suggestion, the necessity of:

(1) Keeping the body clean by sufficiently frequent soap and water baths.

(2) Washing hands in soap and water after voiding bowels or bladder and always before eating.

(3) Keeping hands and unclean articles, or articles which have been used for toilet purposes by others, away from mouth, nose, eyes, ears, and genitalia.

(4) Avoiding the use of common or unclean eating, drinking, or toilet articles of any kind, such as towels, handkerchiefs, hair brushes, drinking cups, pipes, etc.

(5) Avoiding close exposure of persons to spray from the nose and mouth, as in coughing, sneezing, laughing, or talking.

Following the definitions of terms—

Each disease is briefly described with regard to its clinical and laboratory recognition, the etiological agent, the source of infection, the mode of transmission, the incubation period, the period of communicability, susceptibility and immunity, and prevalence.

Following this are offered methods of control—first, those affecting the individual, contacts, and immediate environment, and second, general and specific measures bearing upon the control or prevention of the disease in question.

Thus in condensed form the report presents the facts according to current medical knowledge and experience. It contains authoritative and approved data which may be amplified and interpreted to the public for general guidance and for explaining the policies of the health department. Of course this report should be of great value to health officers, departments of health, or legislative bodies in the formulation of rules, regulations, or sanitary codes dealing with the control of communicable diseases.

In some cases particular items are listed for public education, but most of the "general measures" call for public consideration, and many of the specific methods of control need to be interpreted to the public.

This report is to be issued in separate form as Reprint No. 1697, and may be purchased from the Superintendent of Documents, Washington, D. C., for 5 cents a copy. It should be welcomed by the editorial writers of newspapers.

"Telling The Truth"—Under this title the *Weekly Bulletin*, Oregon State Board of Health, Portland, discusses truth telling (Aug. 27, 1935) which may have application beyond the field of cancer control.

Shall we tell a patient the truth? This is a very important question to the doctors and to the laity alike. The answer is not simple but is beset with an unusual number of complications. It has been shown repeatedly that the avoidance of contracting fear of cancer by the dissemination of knowledge is to increase deliberately the chances of cure. It has been demonstrated that

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*Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

ignorance which breeds pessimism is best dissipated by frankly spreading the facts concerning the nature, prevention, early diagnosis and treatment of cancer. It has taken a great deal of time, effort and money to educate the public concerning cancer. Its attitude toward the cancer problem has reached a point where it has more intelligence and less emotion than ever before. With an over-emotional public, cancer information might conceivably prove harmful. On the other hand, with an intelligent public much greater harm would be done by not telling the truth. A public trained to expect frankness offers a very different field for coöperative cancer control than a superstitious, ignorant, and timid public.

The European countries present direct and valid evidence on this point. Sweden in 1930 presented an outstanding development in cancer control. Patients with cancer were told of their condition as a routine procedure. The ways and means of imparting this information were naturally left in the hands of their physicians. In some cases more tact and care in giving this information was necessary than in others. Eventually, however, all patients were informed and a common status was attained. Conferences with numerous Swedish medical men yielded unanimous agreement as to the wisdom of this procedure. As a result of this program, the morale was higher in both the public and medical profession. Diagnosis was rapid and accurate. Treatments were prompt and were attended with remarkable constancy and tenacity. A happy, coöperative relationship was well established and functioned to the advantage of all concerned.

In certain other European nations, ignorance and fear abound. The contrast is eloquent and amazing. This is especially important when one stops to consider how far our own procedure in the United States falls short of the optimum. It is, of course, true, that there may be exceptional cases or peculiar situations which make it advisable that the patient be kept in ignorance. These will always be detected and will, by their very relationship to the ordinary situation, serve to accentuate the great value of frankness as a policy. The real question at issue is: "Have we matured sufficiently to face the truth and to hear discouraging facts as well as encouraging ones?" Most of us believe this level has been reached. To delay longer telling cancer patients the truth is not consistent with the educational program for the control of cancer.

Drastic Safety Education — A realization that "decent, intelligent people must be protected from the fools" (quoting *Collier's*) seems to have prompted drastic ideas in automobile accident prevention.

"—And Sudden Death," by J. C. Furnas, an article in *Reader's Digest*, Pleasantville, N. Y. Has been reprinted, distributed, and even read to offenders in a court room. Supplied at *two cents*, or *$1.50* for 100. With the imprint of Employers Mutuals, Wausau, Wis., copies supplied *free*.

An editorial in *New York World-Telegram:*

A new technique is being born in the nation's battle against the automotive speed demon. It is beginning to dawn on safety advocates that statistics on the number of killed and injured do not rake the consciousness of speedsters.

The discovery is now being made that about the only thing which feaze the reckless driver is the sight of mangled bodies and wreckage or the relentless description of individual cases and specific types of death and mutilation in automobile crashes.

The New York Police Department is working along this line in the use of large posters such as the one showing a motorist holding in his arms a child he had struck. But even that illustration is prettified out of its possible effectivity. There are no blood and no evidence of the childish pain and of the groans of death agony.

From another *World-Telegram* editorial:

We believe that a few ultra-realistic cartoons erected on boards along speedways showing not only the death and physical torture but also the disfigurement and even ruin of the car—pride and joy of the owners—would help bring down the outrageous number of motor accidents daily.

But we believe the cartoons would not be very useful if they only repeated the current type of poster showing a handsome young man holding a hit child in his arms—there is no anguish, pain, blood or destruction brought home in that picture. There must be if the roadside cartoon is to have much real effect.

"Step Off the Gas!" *Collier's*, April 6, 1935. A page editorial reviewing accident statistics gathered by the Travelers Insurance Company.

"Chicago Judge Sends Youthful Violators to Look Upon Death" reports the action of a Chicago judge in sending 20 traffic violators to the morgue and to the county hospital to see some results of reckless driving. *Public Safety*, National Safety Council, 20 N. Wacker Drive, Chicago, Ill. Aug., 1935. *10 cents.*

In the *Chicago Tribune*, July 1, appeared a full page of photographs, pictures of 264 of the 451 persons killed in Cook County automobile accidents in 6 months.

Starting July 1 the 10,000 licensed cafes and liquor dispensaries in New Jersey were officially directed to display conspicuously a striking poster against driving when intoxicated.

"Cinematic Effects in Practical Films" describes a sound picture to "show that, while moderate drinking may do no harm, the excessive use of alcohol is very dangerous." There are explanations and illustrations of numerous movie devices for securing unusual and dramatic effects in safety films. *Movie Makers*, 105 W. 40th St., New York, N. Y. Sept., 1935. *25 cents.*

But the fundamental difficulty is brought out under "Contradictions in Social Thought" in a book review by Harry Hansen in *New York World-Telegram*. The book is "Law and the Lawyers," by E. S. Robinson (Macmillan). Says the reviewer:

> Professor Robinson does not say that we are kidding ourselves when we adopt laws that the social conscience does not want enforced, but that is what his thought amounts to. For instance, everybody knows that the death record from speeding automobiles is a disgrace to our nation, but that does not stop speeding. The law makes a certain attempt to stop speeding. People who break the laws are arrested, and "the public thus protects itself against the guilty feeling that nothing is being done."
>
> But that does not stop injuries and deaths by automobile. The manufacturer continues to talk up high speed when he sells his cars; the authorities continue to build roads intended to make speed possible without accidents. Individuals like to believe that the accidents that happen to others will not happen to them. Psychologically, our present adjustment is purely symbolic. Professor Robinson wants the law to be realistic.

"What It Would Mean to You"—From the "Foreword" of "That Eyes May See":

> Think what it would mean to you, if you had never seen a Mississippi red bird; or a waxy white magnolia bloom upon a glistening green bough; or a field of feathery cotton; or a tall and stately pine; or a sunset on the coast!

This pamphlet from Mississippi State Board of Health, Jackson, presents lists in the form of diagrams which seem to give them new interest values. "Danger Signals" is really a list of 9 warning signs to teacher or parent that a child's eyes need attention, but offered as a full-page "diagram" it looks more interesting and readable than is usually the case.

Frowning	Danger Signals
Watery Eyes	
Fatigue After Continued Use of Eyes	
Blurred Vision	
Soreness or Redness of Eyelids	
Puffiness of Eyelids or Under the Eyes	
Drooping of Lid	
Headache, Mild or Severe	
Aching of Eyes	

Book Reviewers Talk Mental Hygiene—Again mental hygiene benefits from the published experiences of one who has been through the mill.

Doubtless "Asylum," by William Seabrook (Harcourt, Brace & Co., New York), will be formally reviewed in the *Journal*. So these paragraphs are merely to call attention to the extensive reviews the book has been receiving. Written with intelligence and sympathy these reviews have presented phases of mental hygiene and its ap-

plication to a wide reading public. The reviewing, also, as has been said of the book, is "a milestone along the arduous way of humanizing the approach to the mentally affected."

When the Report Is Mimeographed—The annual report of a county health department is before me. It is mimeographed on 6 sheets, plus a title sheet, all on the plain, commonplace mimeograph paper. A staple at the middle of the top of the sheets fastens them together.

Suggestion one: Move the staple to the upper left corner.

Suggestion two: Use a tinted mimeograph paper. See the bulletins of Health Department, Middletown, N. Y., and New Mexico Bureau of Public Health to see what results from use of color in the paper, plus a sense of design in the layout of the pages.

Where Is It Published?—Reprints from professional and popular magazines would be more valuable to possible readers and students if more fully identified.

Some medical journal reprints at least give the city of the authors. *A.M.A. Journal* reprints carry the full name and address of the Association.

But two reprints from Milbank Memorial Fund, for example, give no addresses for publisher and authors, and no obvious indication of the official status of the authors. This means extra office detail in any library where there is careful filing and cataloging.

How May They Get It?—Will the author or publisher send free a copy of a reprint? Will the health survey report be sent upon request? Are samples of this or that available to any health worker?

Or, is there a price? Will it be sent for 3 cents postage? Is the distribution limited to the one state? Is it available only to school people?

At least every editor who receives a reprint or other publication would like answers to the above and similar questions. Then the editor could be more precise in his mention of a publication. He could mention material without fear that his readers might write fruitless letters. And the editor could be sure that his readers will do their share in sending postage or a price.

Thus editor and reader both will be the happier.

Health Education in August, 1935, Journal—There was much of direct interest to the health educator in the August, 1935, issue of *American Journal of Public Health*.

The quotation from Bernard Shaw, "Experts Wrong and Genuine" (page 912) might be reread to advantage whenever we call upon "experts" to evaluate our health education activities or materials.

"The Teaching of Epidemiology by Applicatory Problems," by Munson (pages 913–919), concerns professional instruction, but the recommendation of Sherlock Holmes as collateral reading, and the readable details of a new case history plan, can be applied to both school and popular health education.

In "Sewage Contaminated Irrigation Water," by Chapman (pages 930–937), is expressed an optimistic faith in the people in connection with much intestinal disease:

> This condition among us has persisted because the majority of thinking people, the sort of people who are sensitive to matters of hygiene, have not realized that it existed. I am convinced that all that is necessary to end this repellent situation is to inform the people of the facts.

"Diphtheria in Grays Harbor County, Washington," by Laue (pages 948–949), reports a rural county campaign.

"A Neglected Opportunity for the Control of Respiratory Disease," by Calver (pages 953–958), emphasizes education and public opinion touching food and drink cleanliness.

"Health Today and Tomorrow," an editorial (page 960), presents the educational campaign which is to culminate in October.

"Books and Reports" (pages 973 and 977) reviews books on phases of school health education.

"Conferences" (pages 987–988) gives dates of gatherings from which we should get material for various uses, including news in newspapers.

Radio Child Study Club — In October will open the fourth year of aid to communities in Iowa in organizing study groups. Leadership is provided by Iowa Child Welfare Research Station in coöperation with Iowa State College and Iowa State Teachers College.

Four courses are offered—one concerned with the newborn infant, one with preschool children, one with school-age children, and one with adolescents. Each course is built upon a two-year plan, twelve discussions the first year constituting the first series and twelve the succeeding year constituting the second series. Parents are encouraged to complete the two-year cycle in each course chosen to gain the fundamentals involved in intelligent guidance of children. They may register for one or more courses.

A program is broadcast for each course every two weeks through the radio stations of the University of Iowa (WSUI) and Iowa State College (WOI). The broadcasts relating to the infant and the preschool child are given on alternate Tuesdays at 2:30 P.M. over WOI and at 8:00 P.M. over WSUI. Those concerning the elementary school child and the adolescent are given on alternate Wednesdays at 2:30 P.M. over WOI and on alternate Thursdays at 8:00 P.M. over WSUI. Parents may enroll under the group or individual plan.

For the plan and materials for groups or individuals, address University of Iowa, Iowa City, or Station WOI, Ames, Iowa.

Building a School Health Library —Many requests for health information from teachers and pupils of Avon Avenue School, Newark, N. J., led the health counselor of the school to approach the librarian of the Board of Education who—

was receptive to the idea and willing to give assistance. As a preliminary step, she sent a full-time ERA worker to the school who immediately began the work of organizing books, pamphlets, posters and pictures. Since all the books fell into the category of health which made their classification identical, we marked the books alphabetically according to the author's last name. The posters, pictures, and pamphlets were filed accordingly. A card bibliography was made, headed by the topics most emphasized in the grades, sleep, rest, cleanliness, food, etc. Under these headings we compiled lists of books available in our library containing the best material on the subjects. To make matters even simpler we indicated for what reading level each book was suited. For circulation purposes we used a loose-leaf notebook which served as a record of the total collection as arranged on the shelves. One title was included on each sheet and the borrower's name was recorded on this sheet.

At present our health library consists of more than two hundred books. Among these are the most recent and useful for teachers and pupils. We keep our library up to date by the addition of new books, by subscription to current health magazines, and by soliciting various health agencies throughout the country for pamphlets, pictures, etc. The Board of Education appropriates a certain amount of money each year to each school for the purchase of books, so that we are able to secure some in this way. We try to get the pamphlets and pictures free or at very small cost. We are well on our way to the establishment of a good picture and pamphlet collection for use in the classrooms.

"Building the Health Library," by M. V. Fitzpatrick. *Public Health Nursing*, 50 W. 50th St., New York, N. Y. Sept., 1935. *35 cents.* A list of books most frequently consulted by teachers and pupils will be supplied at the above address. Enclose reply postage.

A much more ambitious plan for a school of nursing is described in

"Making the Resources of the Library Available," by E. Wigmore. *American Journal of Nursing*, 50 W. 50th St., New York, N. Y. Aug., 1935. *35 cents.*

There is a decimal classification, discussion of cataloging, filing method, etc. Regarding the section on health education, the article says:

> The making available of health education materials to the student nurse is a technic that should be taken seriously by all school libraries. . . .
>
> Not only the school but the school library must take cognizance of this enlarged responsibility and assemble for the student nurse's information and use representative health education materials, those tools of the health educator.

Bequests for Public Health—The recent reminders that the A.P.H.A. might well be remembered in the making of wills stimulate the thought that public health in general should share more largely in bequests for the public good.

Men and women are making wills notwithstanding the current economic disturbances. Public health agencies must exert themselves now to be remembered later.

Some of the steps to be taken are outlined in a memorandum entitled "Bequests and Trusts," supplied by Social Work Publicity Council, 130 East 22d St., New York, N. Y. *10 cents.*

A Pathometer for Health Administrators—To put the leading infectious diseases "on the spot" day by day New York uses a simple device.

> In the pathometer here described we have a simple and very useful device for keeping an up-to-date record of the various diseases ordinarily reported to the health authorities. It consists, essentially, of a large framed cardboard showing the ten or twelve major infectious diseases in a manner illustrated by the accompanying graph. The space comparable to the tube of a thermometer is cut out, and behind this is a piece of tape, part white, part colored, so fixed by rollers above and below that it can be moved up and down. At the beginning of each month the tape is so adjusted that the seam between the upper white portion and the lower colored portion is at zero. Each day, as cases of the disease are reported, the tape is rolled, so that the colored portion indicates the total number of cases reported during the month up to that time.
>
> From the experience of the past five or ten years, depending upon circumstances, one calculates the average case expectancy for the particular month, and this expectancy is indicated by means of a small cardboard tab fastened as shown in the illustration. In measles it is well to calculate an expectancy for "measles years" and "non-measles years," for the figures often vary enormously.
>
> In the headquarters of the New York City Department of Health, one of these pathometers is kept constantly up to date in the Bureau of Preventable Diseases; another in the office of the Commissioner of Health. The latter, therefore, is at all times in touch with the prevalence of the reportable diseases in the city.
>
> Naturally, this is only one of the devices used to keep in touch with the situation, for in addition to this, pin maps to show the geographic distribution of the diseases, as well as other graphic records are also utilized. The pathometer has not been patented and is here described in the hope that the device will be of service to other health administrators.

—In *Quarterly Bulletin*, Department of Health, New York, N. Y. No. 3, 1935.

If you lack the desire for home construction, and do have the money for a purchase, a manufactured device will be supplied by Educational Exhibition Co., Custom House St., Providence, R. I.

Pan America Resolves—The Ninth Pan American Sanitary Conference, reported in *Public Health Reports*, Washington, D. C. (Aug. 30, 1935), resolved that

> the principles of hygiene should be taught in public schools and other institutions of learning.

The Pan American Conference also recommended educational work in schools as a means of combating alcoholism.

Dramatized Radio Programs—"Your health, ladies and gentlemen" will introduce the new radio program of the American Medical Association. Beginning October 1, 1935, it will be offered over the Blue network of N.B.C. A list of the 28 stations will be supplied upon request to the A.M.A.

For every Tuesday, 5 P.M., E.S.T., a new type of program, in vivid dramatic form with incidental music, is being developed, showing medical emergencies and how they are met. The hero, the doctor who is available day and night for the protection and promotion of your health, is the real sponsor of this series of practical and entertaining health broadcasts.

Dental Health Education in Iowa—The Iowa Dental Education Plan has an 8-year history. It is conducted by the Bureau of Dental Hygiene, University of Iowa, Iowa City. The Bureau provides classroom supplies; teaching helps through the school year; visual material; school and community service. For a description of the plan and the materials send *5 cents* to the Bureau for "Bulletin No. 361."

Free Health News Service—"What About the Health of Men Over Forty?," by Dr. John L. Rice, and "Back to School Go Children Next Month: Here's What Parents Should Do About it," by Dr. Allen G. Ireland, each a series of 10 to 12 brief news releases, are the latest from Health News Service, 22 E. 40th St., New York, N. Y. This is the "news feature syndicate organized to disseminate scientific knowledge of public health throughout the United States," furnished by milk interests, but free from trade propaganda.

Hygeia, September, 1935—Topics for talks and articles, quotable material, reference and background material for popular use, are found in *Hygeia*, 535 N. Dearborn St., Chicago, Ill. Here are selected articles from the September, 1935, issue:

School health policies. School report cards (their significance). Osler the man. Curious stories about health (a new series). What's behind the label? (cases of dermatitis from toilet preparations). Obesity, the open door to diabetes. Diphtheria—the big bad wolf (diphtheria no longer invincible). What should your child dance? Hygiene of the eye. The mystery of the red-faced man (medical detecting). Primitive medicine (among the Zulus). Powders and syrups for food drinks. The art of the toothbrush. Paul Ehrlich (another pioneer scientist). How to spoil a child (coddling the convalescent). Is basketball a girls' game? How bacteria grow. New books on health. Questions and answers.

In "School and Health":

The use of textbooks (in teaching health). Health teaching in September. Teaching health through a study of communicable disease. The "why" of some health habits (how children may be taught reasons for health habits). The study of foods begins in the (school) cafeteria.

DATES AHEAD

Oct. 6–12. Fire Prevention Week. Program material from Nat'l Board of Fire Underwriters, 85 John St., New York, N. Y.

"Empire Health Week" in Jamaica has been changed from Oct. 6–12 to Oct. 20–26, 1935.

FOR EDUCATION AND REFERENCE

A group of reprints on medical aspects of dysentery are supplied by Dr. Joseph Felsen, 667 Madison Ave., New York, N. Y.

A new poster calling attention to public health nursing is offered by National Organization for Public Health Nursing, 50 W. 50th St., New York, N. Y. Samples: on paper, 20 cents; cardboard, easel back, 30 cents. Low quantity rates. Space for local agency imprint.

The last contribution of the National Tuberculosis Association to the 1935 Early Diagnosis Campaign is a collection of "Quotations" assembled from "nationally known authorities on tuberculosis." The new feature is the comment on each quotation which interprets or amplifies the quotation for popular use.

"An Organized Community Health Education Program," by Savel Zimand. Reprint. *Milbank Memorial Fund Quarterly*, 40 Wall St., New York, N. Y. A valuable descriptive outline.

"Children's Bureau and Other Publications Relating to Children." Supt. of Documents, Washington, D. C. *Free*. If desired ask also that future revised editions be mailed to you.

"On Health's Highway: Progress in Relation to Cancer Control." New York City Cancer Committee, 150 E. 83d St., New York. Large pages: on the left, quotations from leading physicians; on the right a group of pictures. Presents medical and surgical progress through animal experimentation, under "Surgery," "Physiology," "Pharmaceuticals," etc. No price given.

"Public Health Service Publications." List of publications issued, Jan.–June, 1935. U. S. Public Health Service, Washington, D. C. *Free*.

"Rural vs. Urban Longevity." *Statistical Bulletin*, Metropolitan Life Insurance Co., New York, N. Y. July, 1935.

"Safe Milk: A Public Health Measure," in *Dairy Council Digests*. National Dairy Council, 111 N. Canal St., Chicago, Ill. June–July, 1935. No price is given, nor the address of N.D.C.

"Suggestions for Reading in Public Health Nursing." A new edition of list of publications of National Organization for Public Health Nursing, 50 W. 50th St., New York, N. Y. *Free*. Professional and organization topics, with section on publicity.

MAGAZINE ARTICLES

"Medical Care for the Unemployed." Los Angeles County to give free services to its 400,000 idle. *Literary Digest*, 354 4th Ave., New York, N. Y. Aug. 10, 1935. *10 cents*.

"Playing Safe," by E. R. Grannis (safety); "Spare the Mother," by E. S. Enochs (maternal mortality); "When Illness Comes," by K. B. Oettinger. *Parent-Teacher Magazine*, 1201 16th St., N.W., Washington, D. C. Aug., 1935. *15 cents*.

"Where Every Child Gets Dental Care—and the Dentist Gets Paid!," by C. P. Streetor. *Farmer's Wife*, St. Paul, Minn. Sept., 1935. Copy *free*.

MOTION PICTURES

"The Greatest Mother," Red Cross picture, is available, sound or silent, 35 mm. or 16 mm., rental or purchase. Apply direct to W. J. Ganz Co., 19 E. 47th St., New York, N. Y.

Moving rapidly through views of Red Cross services, with the tempo of the "March of Time" films, the movietone illustrates strikingly the type of activities in which Chapters throughout the nation are engaged. Actual scenes of disaster, showing rescue of flood refugees, feeding by Red Cross Chapters, and dramatic force of flood waters, hurricanes and the like, bring home with force the fine accomplishments of the volunteers under Red Cross direction.

The work of the public health nurse, of the Gray Ladies and others in hospitals and in their contacts with disabled war veterans, are depicted.

"The Mosquito: Public Enemy." Sound, 2 reels. U. S. Department of Agriculture, Washington, D. C. Discusses the mosquito as a pest affecting man and beast, varieties and life history, safeguards and methods of control.

"Pulling Teeth With a Movie Anesthetic," by R. Arell. *Trained Nurse*, 468 4th Ave., New York, N. Y. Aug., 1935. *20 cents*. How a dentist uses overhead movies to distract child and adult patients. For clinics and institutions?

Current Releases of Non-Theatrical Films and Film Notes, Department of Commerce, Washington, D. C., in May issue announced the following:

Several medical pictures, by Medical Cinematographic Society. Apply to: S. A. Bloch, 1865 52d Street, Brooklyn, N. Y. "Milk the Master Builder," and "Preventing the Spread of Disease." National Motion Pictures Co., Mooresville, Ind.

RADIO

"On the Air." National Broadcasting Co., 30 Rockefeller Plaza, New York, N. Y. A promotion pamphlet. Text and pictures give an interesting review of radio history.

Recent health broadcasts reported to us are listed below.

Baltimore City Health Department:

Jerry Junior is ready for school. Sleep. Vaccination. Do it now. Mr. Strong inquires about infantile paralysis (dialogue). Infant care during hot weather. The black widow spider.

Illinois State Department of Health broadcasts over WHFC and WGN. Some topics:

Lockjaw a summer-time hazard. The ubiquitous mosquito and its relation to man. The "outer" and "inner" man on vacation. Foods, freight and advertising.

Minnesota State Medical Association broadcasts every Tuesday, 11:15 A.M., over station WCCO, Minneapolis and St. Paul. Some topics:

Getting ready for school. Diet and health. Shingles. Carbuncles. Foreign bodies in the eye. Pre-natal care. Ticks and disease. Women in cancer education.

Ohio State Department of Health broadcasts regularly over 4 stations in Columbus: WOSU at 2:30 P.M., Mondays and Tuesdays; WBNS at 1:30 P.M., Thursdays; WCOL at 2:00 P.M., Thursdays; WAIU at 4:15 P.M. every Wednesday. Some of the topics:

The diagnostic chest clinic. Health of the school child. Diphtheria. How YOUR Health Department is meeting YOUR problems. Debunking the medicine chest. Conservation. Do we eat to live? Undulant fever and psittacosis. The school nurse. Evolution of the bath. Am I worthy the name "Good Parent"? Health insurance. Typhoid vaccination: its utilization as an individual safeguard. Tuberculosis control and the school child. Maternal and child hygiene program under the social security act. Carbon-monoxide poisoning. Hidden hunger. Just teeth. What have you on deposit in your health bank?

SCHOOLS

"A Project in Rural School Health Education," by R. E. Grout. Reprint of 4 articles. *Milbank Memorial Fund Quarterly,* 40 Wall St., New York, N. Y.

The latest venture in poster contests is sponsored by the Indiana Tuberculosis Association (130 E. Washington St., Indianapolis), and associated organizations. The plan will not help to interpret any particular aspect of health, since

The poster theme is left largely to the student but should be classified under one of the following subjects (which range from "Food and nutrition," to "Sex character education").

BOOKS AND REPORTS

What You Should Know About Heart Disease—*By Harold E. B. Pardee. 2d ed. Philadelphia: Lea & Febiger,* 1935. 127 pp. Price, $1.50.

The author has written an authoritative presentation of many of the aspects of diseases of the heart. His style is simple and understandable for the layman. The tone of the book is helpful and not alarming. The author clearly states that there are many diseases of the heart, and yet he clings to the old title of Heart Disease. It seems to the reviewer that it would have been better if he had changed the title of the book to "What You Should Know about Diseases of the Heart." It is very important that this newer conception be disseminated widely.

It is questionable whether in a book for the layman it is desirable to include instructions for diet and diet lists. It has always seemed to the reviewer that the writer of such a work should be scrupulously careful to avoid giving information that may tempt the patient to treat himself without proper medical supervision.

These are the only criticisms of the book. It is undoubtedly a valuable contribution in its own limited field.

EDWIN P. MAYNARD, JR.

Epidemics and Crowd Diseases: *An Introduction to the Study of Epidemiology—By Major Greenwood, D.Sc., F.R.C.P., F.R.S. New York: Macmillan,* 1935. Price, $5.00.

In his chapter on diphtheria, Major Greenwood digresses to say: "Just as the enjoyment of detective fiction (of which I am a passionate admirer) is marred by foreign and unfamiliar atmosphere—one pines for the fictitious Scotland Yard when one is conducted through the fictitious Sûreté—it is (to me) easier to follow epidemiological plays when the characters move on a familiar English stage." Add that the author is the distinguished President of the Royal Statistical Society, and one has the keynote to this book. It conforms perfectly to the classical lines of British statistical epidemiology.

The first part is an historic review of the efforts of medical philosophers—Hippocrates, Galen, Dr. Caius, Fracastori, Sydenham, and others—to discover the "laws" governing the origins, movements, and distributions of "crowd" diseases. They failed, Major Greenwood maintains (not because they were attempting to bridge the chasm of exact knowledge by sheer force of intellectual effort, not because the invisible world of microscopic and ultramicroscopic parasitic forms of life had not yet been revealed, not because of the lack of development of the experimental method—but) because of the lack of a vital or medical statistical system codifying experience. This much needed statistical methodology was finally developed by the English school in the 18th and 19th centuries particularly as a result of the famous Bills of Mortality and the labors of John Graunt and William Farr. The biometricians—Quetelet, Francis Galton, Karl Pearson, Sir John Brownlee—led the way in perfecting the technic of analysis of the mass data of disease. The author admits that, so far, this new statistical calculus has failed to solve the problems of secular variation, change of type, method of spread, which the old pneumatists and other epi-

demiologists who lived "before the deluge" speculated about, but he has great hopes for the future. He rightly points out that in contributing methods this school has had a profound influence on medical science in general. In commenting on this section of the book it is interesting to note that he regards Pettenkofer as a great epidemiologist and does not even mention John Snow.

He concludes the first portion with a chapter briefly reviewing the contributions of experimental epidemiology, and three on what he terms the "procatartic" (or predisposing) causes of illness—nutritional, occupational and psychological. He terms his treatment of these subjects superficial and incomplete,—with which we agree. After devoting several pages to a discussion of the soul-body relationship and the possible influence of mind upon illness he concludes: "It is certainly not my business as an epidemiologist to expound psychology of which I know little or metaphysics of which I know even less."

In the second part Major Greenwood finds it his duty to apply the general principles of epidemiology to particular cases of crowd diseases among men. Apparently he means by "general principles of epidemiology" the methods of statistical analysis of mass data. He selects for this purpose the typhoid group, cholera, typhus, measles, diphtheria, scarlet fever, smallpox, plague, epidemic diseases of the central nervous system, influenza, venereal diseases, tuberculosis, and cancer. His treatment is largely an historic one, tracing the earliest origins, epidemic movements and some of the distributions of each disease. He makes no effort to give a complete concept of the host-parasite relationships involved in the infectious diseases on the basis of present-day knowledge.

The material which he presents is selected casually to illustrate the application of the statistical technic. Incidently he devotes two chapters to a discussion of whether Sir John Simon was correct in his apotheosis of Edward Jenner as an Ideal Philosopher or whether Charles Creighton was more correct in regarding him as the Complete Rogue, and gives an illuminating account of the circumstances surrounding the introduction of vaccination against smallpox.

The author is very largely absorbed with the variables which affect the human host. The bias is very decidedly for *homo sapiens*. Unfortunately there are no Bills of Mortality for rats, lice, and fleas. Parasites are generally referred to as *materies morbi*. The hereditary and "procatartic" causes of variability in virulence, infectivity, selectivity, etc., of bacteria and viruses receive little attention. The author is largely oblivious of the advances in exact understanding of the biology underlying infectious diseases made during the past quarter century. References of any sort are meager, but such as there are refer almost exclusively to English and German historical or statistical literature.

Withal, the book is delightfully written, rich in classical allusions, contains interesting historical material, and is an excellent introduction to the use of the statistical method in epidemiology. KENNETH F. MAXCY

Community Programs for Summer Play Schools—*By LeRoy E. Bowman. New York: Child Study Association of America*, 1935. 48 pp. Price, $.35.

This text is a study of the summer play school. It shows the need of more adequate child recreation and the opportunity for it. It discusses the history and comparative development of the summer play school program, and puts forth the suggested programs with advice as to organization, personnel, and plant equipment.

There are several interesting tables on the number and proportions of boys and girls enrolled in the principal "Social Agencies for Youth" in the states and leading cities of the United States.

This is a worth while summarization of a special phase of education.

CHARLES H. KEENE

Happy Health Stories—*By Mildred H. Comfort. Chicago: Beckley-Cardy Co.*, 1934. 160 pp. Price, $.70.

Children in school today ought to be intrigued into living a healthy daily routine if the many attractive books coming from the publishers can be a prophetic gauge. *Happy Health Stories* is another one of the attractive health readers on the market and its gay illustrations increase its appeal to children.

Another one of its assets is that the story-book children are engaged in delightful activities in a world of realities, such as picnicking, egg-gathering excursions, gardening, and marketing.

The book has been written for the fourth grade level, so the question regarding the grading of material for those young readers arises. It is prompted by such statements as:

> Fruit juices were full of vitamins. They were cooling and refreshing.
>
> Citric acids in case of thirst, fatigue and overheating.
>
> A calorie is about the amount of heat needed to make a half teaspoonful of water one degree warmer.

Another reference is made to mineral salts. Are children of the fourth grade in our average urban and rural schools equal to coping with statements from the field of physics, chemistry, and dietetics, without some preliminary facts leading up to them?

The average fourth grade child has not a clear conception of vitamins. How many adults have? Too, if we are talking to elementary grade children about vitamins, why dress it up in a spelling like Vita-Mins? However, as a supplementary health reader stressing foods and nutrition the book will be appreciated by many teachers looking for new material. ANNA B. TOWSE

Your Child Is Normal—*By Grace Adams, Ph.D. New York: Covici, Friede*, 1934. 241 pp. Price, $2.00.

This book, covering the first 7 years of childhood, is not only written interestingly but should prove adequate and comforting to the average parent. It has an easy, facile style and a homey spirit which will carry it far into the emotional and intellectual graces of its readers. Many of the "child guidance" texts are written in the bias of a particular school of psychology and it is welcome to find that *Your Child is Normal"* is free of such sectarianism. It is a surprise to know that normal, average childhood needs to be stressed—we have heard and read so much of its aberrations and vicissitudes.

Its opening chapter on The Normal Child and the Average Child gives lucid, concise, scientific data concerning norms of development which are too often assumed to be known. The discussion of masturbation, for example, is well done, calmly and clearly set forth. The author wisely takes the middle ground, avoiding those who would favor absence of inhibition and those whose prudery would drive them to forceful (and unsuccessful) repression of the child's biological curiosity. The quotation from Ellis (page 115) is to the point: "Sexual precocity, while by no means necessarily of evil omen, is less promising for future welfare than its absence."

The advice is timely, for there seems to be an inordinate stressing or, at least, encouragement of much sex curiosity rather than advice as to the simple meeting of questions as they arise.

Chapter XII gives practical examples of the "why" and "how" of these biologic questions as they come from the child.

The author has been true to her foreword: "I have tried . . . to present a picture of young childhood . . . which will still be recognizable to those who know children better in the natural environment of their own homes . . ." I commend the book heartily and trust that its comfortable logic will bring surcease to parents who, while wanting information, have been intimidated or repelled by the didactic bias of some other texts they may have attempted. MAURICE A. R. HENNESSY

Psychology and Health—*By H. Banister, M.Sc., Ph.D. New York: Macmillan,* 1935. 256 pp. Price, $2.50.

Here is a volume that develops with care and readability the doctrine of eclecticism in the application of psychology in medical practice. The author amply outlines the theories of Freud, Adler, Jung, Janet, and others, not in the terms of a protagonist or special pleader but rather as one who is seeking with intelligent criticality all possible common factors that may represent the residua of truth. The contents as a whole are of service to public health officials only to the degree that psychology enters into the fostering of personal health. The entire subject of the psychoses, however, is omitted as the therapy involved is so questionable, but there is a clear discussion of the psychic difficulties that follow a variety of physical illnesses.

The preventive aspects of mental disorder which concern public health administrators are emphasized in the last chapter in terms of education which has as its goal a well integrated character based upon strong and well adapted sentiments. Throughout, stress is placed upon the sentiment forming tendency in terms of attraction and repulsion based upon pleasant and unpleasant feeling tone. While to a large extent temperament is regarded as particularly affected by the endocrines Banister recognizes that the glands are subject to many elements derived from the environment as well as from personal experiences. The protective strength of sentiments in stabilizing of character arises when they are fixed upon objects that tend toward permanence and are unlikely to be lost.

It is rather interesting to find that the author deems psychology somewhat shocked by psychoanalytic conclusions because, as he interprets it, psychology has not rejected the false nor absorbed the true elements that may have arisen from psychoanalytic doctrines. Psychology cannot be shocked but some psychologists may be timid, conservative, or critical in relation to theories difficult to substantiate in a satisfactorily scientific manner.

All public health officials will agree that mere knowledge in itself is not a preventive and may perhaps agree that public health service would be improved if individual citizens understood the relation of sentiments to socially approved activity. Certainly the major proportion of the difficulties in public health arise from an indifference in sentiment toward the practical meanings of public health work. There exists a definite hazard to the general public well-being, as a result of the incidence of mental instabilities, and psychiatric disorders. Probably the public is penalized economically and socially because too many individuals suffer from insufficient integration of sentiments and character in terms of their responsibility for themselves, their family, or their community. Hence it is the indirect influence of the psychological approach and the implications of a rationally adapted psychology that may be of interest to

public officials, whose specific problems concern masses of men rather than individuals.

Whatever improves the mental health of individuals lightens the tax burden and diminishes the tensions of living that are subversive of group welfare. IRA S. WILE

Training in Psychiatric Social Work at the Institute for Child Guidance, 1927-1933—*By Sarah H. Swift with a Foreword by Lawson G. Lowrey, M.D. New York: The Commonwealth Fund,* 1934. 177 pp. Price, $1.75.

This little book, as the title indicates, describes and discusses the psychiatric social work training program at the Institute for Child Guidance, New York City, during the years 1927–1933.

Psychiatric social work is relatively young and so is the field of child guidance. It is within these areas of activity that the volume under review concerns itself. Chapter I therefore appropriately discusses "Changes in Concepts of Training in Psychiatric Social Work." The changes have varied with the current trend of thought in psychiatry and also with the development of psychiatric social work as an entity. "Training is naturally affected by these shifts in emphasis." Psychoanalysis of the social worker herself is a factor in the shift in emphasis, sometimes causing the worker to assume total responsibility for the case. Miss Swift does well to query whether *shared* therapeutic responsibility will be abandoned. Seemingly *directive* responsibility has already passed from the psychiatrist. Probably the last sentence in this introductory chapter gives the key to the book. "It is in this direction, then, that the essential art of training lies, and while we should not *wish* to minimize the value of accumulated knowledge and development of skills, it is only through our own *wish* to grow and mature that we can achieve the fundamental strength and perspective which may serve to stimulate in others the *wish* to develop a creative fulfillment in their own terms" (Italics mine). *Wish* unfortunately need not lead to *wisdom*.

Miss Swift has done a good job in discussing the program of training at the Institute as it relates to the utilization of case material and the supervisor-student relationship. This part of the book is of value to all who are interested in a training program in psychiatric social work. The examples given of individual training experience clearly and succinctly set out the differences in the human material under training. But one may well question whether a philosophy of case work that places major emphasis on the solution of problems by means of a dynamic relationship which will cause "the development in the student of an ability to 'resign her reliance upon social norms, moral standards and sound treatment plans, in favor of limited treatment ends and the stimulation of growth processes within the individual which may carry him she knows not where' may be considered the criterion of success."

However, Miss Swift is not unmindful of the fact that different emphasis on case work responsibility and objectives in treatment might exist in other clinics and that "in so far as such differences do exist the training emphasis will vary." Hers is an account of the work in one clinic and she undoubtedly has given a fair report of the work done there.

Such a book as this one has value. It tends to cause others to come to grips with a most important field of training—psychiatric social work—and with the philosophy underlying it.

HENRY C. SCHUMACHER

Lilly Research Laboratories. Dedication. Indianapolis, Ind., 1934. 128 pp.

The dedication of the Research Laboratories of Ely Lilly and Company, October 11 and 12, 1934, carried to Indianapolis a remarkable gathering of scientific men, including four Nobel Prize winners. There were a number of addresses by notable men.

The present volume is a collection of the addresses made on that occasion, including the address of welcome by the head of the firm, Mr. Eli Lilly. Scientific addresses were given by Dr. Irving Langmuir, Sir Frederick Banting, Sir Henry Dale, Drs. Elliott P. Joslin, George R. Minot, Frank R. Lillie, George H. Whipple, Carl Voegtlin, George H. A. Clowes, and others.

The volume is beautifully printed and illustrated and ends with a list of those who attended. It is valuable not only on account of the addresses given but also as a souvenir of an unusual character. MAZŸCK P. RAVENEL

Maryland State Department of Health Report of Bureau of Sanitary Engineering—1934—*By Abel Wolman, Chief Engineer.*

This report is full of outlines of original technical studies of the Engineering Division of the State Health Department and a summary of the various activities of the Bureau.

It is pointed out that the incidence of typhoid fever continues on a downward trend.

Approximately $4,400,000 worth of plans for work were submitted to the department for review and the major portion of the total expenditures were financed through the aid of the Emergency Public Works and the Civil Works Administration of the Federal Government.

An outline of the work done by communities during the year 1934 is listed under the following headings: Water Supply & Sewerage; Metropolitan Districts; School; Camps, Swimming Pools, Summer Resorts; State Institutions, and Sealing Abandoned Coal Mines.

Approximately half the report is given over to a summary, in some little detail, of special technical studies under the following headings: Water; Sewerage; Industrial Wastes; Stream Pollution; Industrial Hygiene; Miscellaneous and Oyster Survey.

An example of the type of studies made is shown by the studies that were carried out under the heading of "Water." These studies included:

1. The study of the "internal corrosion of distributing mains on the Cumberland supply"
2. The "maintaining of chlorine residuals in remote sections of the Hagerstown distributing system"
3. The "efficiency of a zeolite iron removal unit of 27,000 gallons capacity"
4. The preliminary study of the water supply of LaPlata with reference to some "objectionable characteristics of the water"
5. Study of the "new Pines-on-Severs iron removal plant"
6. Study of the "turbidity and iron stain difficulties" existing in the Epping Forest water supply
7. Studies "to obtain complete removal of iron and lighten the load on the pressure filter by improving the settling characteristics of the floc" on the Sparrows Point water supply

It is stated that activated carbon is applied to the water for taste and odor control at 13 supplies, placing Maryland among the leaders in the use of activated carbon for taste and odor control of the public water supply.

Special studies have been made under each of the above headings comparable to the studies made under the water supply heading.

A study of this report by the Bureau of Sanitary Engineering of the State Health Departments, as well as Municipal Health Departments should be stimulating to those engaged in this branch of public health work.

ALFRED H. FLETCHER

Nursing Mental Diseases—*By Harriet Bailey. (3rd ed.) New York: Macmillan,* 1935. 258 pp. Price, $2.50.

Not much comment needs to be made on this splendid text in its third edition, as most nursing schools are familiar with the earlier editions and know their value. This one is very similar in content to the earlier issues only it has been simplified. For instance, the introductory chapter on psychology has been omitted as there are good psychology texts for nurses available now.

A brief summary of personality development and alteration is given in this text for the first time to emphasize the importance of understanding mental reactions in order to nurse mental disease patients more efficiently.

Mental hygiene and the preventive aspects of mental disease are dwelt on in a way to please all public health workers.

The whole book is eminently practical because it is written by a nurse who knows from long years of practice what she is talking about.

EVA F. MACDOUGALL

A New Deal in Liquor: A Plea for Dilution—*By Yandell Henderson. Garden City, N. Y.: Doubleday, Doran,* 1935. 239 pp. Price, $2.00.

This is an interesting book containing a wealth of material regarding alcohol as a social and physiological problem. The author makes points which apparently are understood neither by the general public nor by our legislators. The law fixes the same tax on the "proof gallon" as on the "wine gallon when below proof," which in his opinion amounts to taxing the water with which alcohol is diluted, taking away the incentive to dilute spirits, and promoting strong liquors.

He says that America has a liquor problem unlike that of any other country. American life is deficient in such social pleasures as are typified in the German beer garden. He objects to the sale of distilled liquors over the same bar as beer. He believes that the solution of the liquor question for us lies in the consumption of the milder alcoholic beverages. We should regulate the sale of spirits somewhat as we do that of opium, and of lighter beverages as we do tobacco.

The introduction of beer in the third quarter of the last century reduced the consumption of spirits by one-half. The consumption of wine has remained nearly stationary and at a low figure for several generations, and there is no indication of an increasing taste for wine. Unlike many other peoples, we do not take alcohol with our meals, but drink before and between meals.

The author holds that alcohol becomes seriously habit forming and harmful only when it reaches between 15 and 20 per cent by volume, and the higher the concentration, the greater the injury to the individual as well as to society. By confining drinking to beverages below 15 to 18 per cent by volume the peculiar American problem would largely disappear.

The book contains much interesting history. There are two appendices, the first of surpassing interest, being "An Inquiry into the Effects of Ardent Spirits upon the Human Body and Mind," by Benjamin Rush, M.D., published in 1814; and the second, a summary of the Report of the Committee of Fifty, which made its studies between 1893 and 1903.

There is a short and interesting discussion of the use of euphorics, such as tea, coffee, chocolate, and certain other intoxicants; namely, the alkaloids. He holds that the comparison between alcohol and the alkaloids is not in the slightest degree overdrawn. This book is based on facts, and well worth reading and study. MAZÝCK P. RAVENEL

Thinking About Marriage—*By Roy A. Burkhart. New York: Association Press*, 1935. 156 pp. Price, cloth, $1.75, paper $1.00.

This volume is a practical guide for the discussion of courtship and marriage with groups of young people. Every young person is absorbed by his thoughts on this subject and he gets surprisingly little sound guidance to support his natural high idealism. This author makes an objective approach which promotes thoughtful consideration. A skillful leader could bring to bear on such a group a large amount of biological and hygienic information.

This is a good example of the discussion group technic, a method which is seldom used by those in the field of public health. Wholesome sex behavior stands at the center of any effective program in venereal disease control and should not be overlooked by the sanitarian. If health officers generally would sponsor serious group thinking by young people under trained leadership we would have a fresh and constructive approach to this old problem. If someone is searching for a new idea in health education this fall this volume and the method which it proposes can be recommended.

REGINALD M. ATWATER

The Appraisal of Public Health Activities in Pittsburgh, Pennsylvania, 1930 and 1933—*By Marian H. Ewalt and Ira V. Hiscock. Pittsburgh: Bureau of Social Agencies, Federation of Social Agencies of Pittsburgh and Allegheny County*, 1935. 125 pp.

This appraisal of Pittsburgh's public health activities is an attempt on the part of the Federation of Social Agencies to provide a basis for better planning of community health organization and services. The appraisal was conducted under the auspices of a sponsoring committee of 21 representing all of the interested groups in the city. A committee of equal size was appointed by the Medical Society to assist and special committees to deal with such important functions as tuberculosis, maternity and child hygiene, and school hygiene were called into being.

The appraisal first orients the reader with the problems of population, climate, industries and economics of the community and then describes in considerable detail the organization and development of the public health program from 1929 through 1933 setting forth the interests of the many special agencies which participate to varying degrees in the local program. Chapters in the report are devoted to the discussion of the organization and conduct of services in each of the special fields pointing out problems and the present services and the needs. Specific and timely recommendations are made for the future conduct of the program in each field.

One is a bit surprised at the relative meagerness of the mortality and morbidity statistics, as one might expect in a city of this size reliable vital statistics would be available since early in this century. In a few instances, comparisons are made between figures for 1920, 1930 and 1933 of both cases and rates, which seem like meager data from which to draw conclusions.

The appraisal of services indicates that vital statistics, laboratory, acute communicable disease control, maternity hygiene, infant hygiene, general sanitation are all developed to 85 per cent or better. It is surprising to find that organized services for venereal disease supervision and control are practically lacking and that this is the weakest phase of the present public health program. Especially is this surprising since the state of Pennsylvania has had organized clinics in many counties.

The report sets up as special problems demanding attention the control of venereal infections, the development of a mental hygiene program, services for control of cancer and heart disease.

One looks at the end of the report for some general recommendations of the Federation as to the program which the community planned to follow in putting the findings of the survey and appraisal into effect. Apparently the Federation has not yet formulated any course of procedure. The conduct of the appraisal, however, utilizing many groups of interested people in the city was no doubt planned to give them an intimate acquaintance with the problem and to fit them to carry on the responsibility of program planning.

It is believed that the report would be more thoroughly and extensively read if it had been printed with a type of a lighter face and the material had been less crowded on the page. One finds difficulty in reading it consistently for long periods. W. F. WALKER

BOOKS RECEIVED

THE MERCK MANUAL OF THERAPEUTICS AND MATERIA MEDICA: A Source of Ready Reference for the Physician. Compiled and Published by Merck & Co., Rahway, N. J. 1934. 1,379 pp. Price, $2.00.

THE PHYSIOLOGY OF PHYSICAL EDUCATION FOR PHYSICAL EDUCATORS AND THEIR PUPILS. By Percy M. Dawson. Baltimore: Williams & Wilkins, 1935. 938 pp. Price, $8.00.

CLINICAL PARASITOLOGY AND TROPICAL MEDICINE. By Damaso de Rivas. Philadelphia: Lea & Febiger, 1935. 367 pp. Price, $5.00.

TEXTBOOK OF ATTENDANT NURSING. By Katharine Shepard and Charles H. Lawrence. New York: Macmillan, 1935. 433 pp. Price, $3.00.

ELEMENTS OF STATISTICS. By Harold T. Davis and W. F. C. Nelson. Bloomington: Principia Press, 1935. 424 pp.

PNEUMONOKONIOSES (SILICOSIS) LITERATURE AND LAWS OF 1934. Compiled by Geo. G. Davis, Ella M. Salmonsen and Joseph L. Earlywine. Chicago: Chicago Medical Press, 1935. 490 pp. Price, $10.00.

PUBLIC HEALTH ADMINISTRATION IN THE UNITED STATES. By Wilson G. Smillie. New York: Macmillan, 1935. 458 pp. Price, $3.50.

PREVENTIVE MEDICINE AND HYGIENE. 6th ed. By Milton J. Rosenau. New York: Appleton-Century, 1935. 1,481 pp. Price, $10.00.

DO'S AND DON'TS FOR HEALTH, HAPPINESS AND ABUNDANT LIFE. By John J. Sutter. Bluffton, O.: Bluffton News Printing & Publishing Co., 1935. 152 pp. Price, $1.00.

NUTRITION OF MOTHER AND CHILD. 4th ed. By C. Ulysses Moore. Philadelphia: Lippincott, 1935. 258 pp. Price, $2.00.

THE REFERENCE SHELF. VOL. 10, SOCIALIZATION OF MEDICINE. Compiled by Julia E. Johnsen. New York: Wilson, 1935. 335 pp. Price, $.90.

ASYLUM. By William Seabrook. New York: Harcourt Brace, 1935. 263 pp. Price, $2.00.

DERMATOLOGY AND SYPHILOLOGY FOR NURSES, INCLUDING SOCIAL HYGIENE. 2d ed. By John H. Stokes. Philadelphia: Saunders, 1935. 368 pp. Price, $2.75.

A MARRIAGE MANUAL. By Hannah M. Stone and Abraham Stone. New York: Simon & Schuster, 1935. 334 pp. Price, $2.50.

THE BOY WHO HAD NO BIRTHDAY. By Mabel Leigh Hunt. New York: Stokes, 1935. 259 pp. Price, $1.75.

GENERAL BACTERIOLOGY. 11th ed. By Edwin O. Jordan. Philadelphia: Saunders, 1935. 825 pp. Price, $6.00.

SEWAGE DISPOSAL: A MARKET PICTURE OF A RAPIDLY GROWING INDUSTRY. Obtainable from Municipal Sanitation, New York, N. Y.

FOOD AND BEVERAGE ANALYSES. By Milton Arlanden Bridges. Philadelphia: Lea and Febiger, 1935. 248 pp. Price, $3.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Modified Prone Pressure Resuscitation—From France comes this modification of the Schafer method, requiring the services of two operators. Increased air intake is claimed for it.

AXON. Modified Schafer Method of Artificial Respiration. J.A.M.A. 105, 8:609 (Aug. 24), 1935.

Poliomyelitis Vaccine — Formalin inactivated poliomyelitis virus is probably a safe vaccine and begins to develop demonstrable antibodies in about a week. The authors conclude, conservatively, that only further study will show whether sufficient and permanent protection is given. It may be said, however, that the limited experience in the face of epidemics indicates the value of vaccination. In a second paper in this interesting symposium, one author discusses steps which led to the present position.

BRODIE, M., and PARK, W. H. Active Immunization Against Poliomyelitis. New York State J. Med. 35, 16:815 (Aug. 15), 1935.

Supervising Vitamin D Milks—Discussing the necessary regulations for vitamin D milk to insure that the customer gets what he pays for, the author suggests that minimum limits of vitamin D might be established, that periodic tests be made, but that no statement of the number of units contained should appear on the cap.

BROOKS, P. B. Vitamin D Milk Control. New York State J. Med. 25, 15:776 (Aug. 1), 1935.

Controlling Communicable Diseases—The present-day attitude toward control measures against measles, whooping cough and scarlet fever are admirably expounded in this symposium. Not new, but good.

ELEY, R. C., *et al.* Symposium on the Control of Certain Communicable Diseases. New Eng. J. Med. 213, 5:195 (Aug. 1), 1935.

Immunizing Babies Against Diphtheria—Evanescent immunity to diphtheria in infants interferes with the response to vaccination with toxoid. Therefore, immunization should not be done without a preliminary Schick test, is the conclusion of this paper.

GREENGARD, J., and BERNSTEIN, H. Passive Immunity in Infants and Their Response to Diphtheria Toxoid. J.A.M.A. 105, 5:341 (Aug. 3), 1935.

Scarlet Fever Immunization—Experience in Philadelphia in protecting children against scarlet fever leads the author to urge its more widespread use.

HENRY, J. N. A Study of Active Immunization Against Scarlet Fever. J.A.M.A. 105, 7:489 (Aug. 17), 1935.

Placental Extract and Measles—Immune globulin was found in this study to be of definite value in the treatment, modification and protection against measles.

LEVITAS, I. M. Treatment, Modification and Prevention of Measles by the Use of Immune Globulin (Human). J.A.M.A. 105, 7:493 (Aug. 17), 1935.

Preventing Rabies in a Large City—Discussing control measures applicable to New York City conditions, the author points out the difficulties in enforcing muzzling and leashing orders, and urges that owners be made responsible for bites by their dogs.

Persons bitten should receive compensation whether or not the dog proves to be rabid.

OLESEN, R. Control of Rabies in New York City. Pub. Health Rep. 50, 33:1087 (Aug. 16), 1935.

Who Was It Who Used To Talk About Depression Benefits?—Children in families whose income has fallen to a low level have suffered most in the recent economic depression. This is the conclusion of a study of relative changes in height and weight from 1929 to 1933 in children of families in various economic strata.

PALMER, C. E. Height and Weight of Children of the Depression Poor. Pub. Health Rep. 50, 33:1106 (Aug. 16), 1935.

Medical Practice and Public Hygiene—Recounting how the medical profession coöperated in the public health programs of Maryland's local health departments, the author urges the necessity for closer coöperation everywhere.

RILEY, R. H. Preventive Medicine. J.A.M.A. 105, 8:555 (Aug. 24), 1935.

Rules for Communicable Disease Control—This is the latest revision of the standard regulations for the administrative control of the communicable diseases usually required to be reported in the United States.

SUBCOMMITTEE ON COMMUNICABLE DISEASE CONTROL, COMMITTEE ON RESEARCH AND STANDARDS, AMERICAN PUBLIC HEALTH ASSOCIATION. The Control of Communicable Diseases. Pub. Health Rep. 50, 32:1017 (Aug. 9), 1935.

A Modified Death Rate—Willcox makes death rates for states more comparable by "standardizing" for sex, race, nativity, and age. As a result the ranks of the various states change greatly, and the "scatter" of the rates is reduced.

WILLCOX, W. F. An Improved Method of Measuring Public Health in the United States. Revue de l'Inst. Int. de Statistique, I, 1935, (reprint).

ASSOCIATION NEWS

THE ANNUAL MEETING

OCTOBER 7–10 will find many of the readers of the *Journal* in Milwaukee for the 64th Annual Meeting. Nearly 300 papers and reports are listed on the program. Those who will not have the good fortune to hear them personally are reminded that the best ones will appear in the *Journal* during the year, and that all committee reports will appear in the Year Book.

Readers are urged to watch their local newspapers for announcements of radio programs originating at Milwaukee during the week beginning October 6. At least one of the several periods arranged will be over a national network while others will involve as many as thirty stations.

A WORD TO THE THRIFTY

VERY few of us, at any time, will entirely disregard an opportunity to reap a financial benefit from thrifty buying or from careful and calculated investments. Why, then, do A.P.H.A. Fellows continue to overlook the gain inherent in Life Membership? They should do so no longer.

A careful study of the chart on the reverse page will reveal the savings which will accrue to Fellows by taking Life Membership at various ages. For example, a Fellow applying for Life Membership at the age of 40 will save a little over $75. This saving (three-quarters of the cost of Life Membership) is of such proportion as to warrant careful investigation.

Beside the straight economical benefits, others accrue to Life Members: (1) annual payment of bills is onerous to some—Life Membership eliminates that; (2) in times of low income, a Life Member is assured of his continuation in the Association, thereby safeguarding for all time his professional standing; (3) a Life Member can pride himself on the high type of professional spirit he has shown by investing in the future of public health work.

Life Membership dues need not be paid at once—the payments may be spread over a year from the date of election, which takes place at each Annual Meeting.

Some may ask—What is done with the dues of Life Members? They are set up in a Life Membership Fund entirely separate from other Association funds, and only the interest therefrom is used to carry the cost of each Life Member's participation in Association activities.

It must be obvious that the advantages of Life Membership far outweigh the disadvantages. The Committee on Fellowship and Membership, therefore, urges each and every Fellow to give serious thought to the desirability of applying for Life Membership.

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Orville G. Brown, M.D., Dr.P.H., Balboa Heights, C. Z., Chief Health Officer, Panama Canal

Frederick McD. Harkin, M.D., City Hall, Marquette, Mich., City Health Officer

Wallace D. Hunt, M.D., 606 City County Building, Seattle, Wash., King County Health Officer

F. Isabelle Kapp, M.D., M.S.P.H., 1459 Wythe Place, The Bronx, New York, N. Y., Director, Out-Patient Department, Lincoln Hospital

Julian O. Long, M.D., Box 504, Belen, N. Mex., District Health Officer

Charles Y. Moser, M.D., Terra Alta, W. Va., County Health Officer

Dudley A. Reekie, M.D., Box 108, Somerset, Ky., Director, Pulaski County Health Department

Alex B. Shipley, M.D., Tazewell, Tenn., Director, Claiborne-Grainger Health District

H. H. Tuttle, M.D., Department of Public Health, Springfield, Ill., Superintendent of Health

Dr. James S. Walton, 158 Guy Park Avenue, Amsterdam, N. Y., District State Health Officer

Laboratory Section

Alexander M. Carr, M.D., Jamesburg, N. J., Medical Director, Applied Research Laboratories, Inc.

Marcella J. Movius, B.A., 236 Hart-Albin Building, Billings, Mont., Laboratory Technician

Royal C. Perkins, Ph.D., 201 N. El Molino, Pasadena, Calif., Laboratory Director, Biological Research Laboratories

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Roger A. Nolan, M.D., 814 Glorietta Boulevard, Coronado, Calif., Supervisor of Health of families of the officers and enlisted personnel, U. S. Navy

Alexander Ropchan, M.A., 203 N. Wabash Avenue, Chicago, Ill., Executive Secretary, Health Division, Council of Social Agencies of Chicago

DECEASED MEMBERS

C. A. Bevan, M.D., West Haven, Conn., Elected Member 1918, Fellow 1923

Professor John Weinzirl, Seattle, Wash., Elected Member 1906, Fellow 1922

F. F. DeVore, M.D., Toledo, O., Elected Member 1927

Frederick T. Fitch, M.D., East Hampton, Conn., Elected Member 1932

George R. Thompson, M.D., Luzerne, N. Y., Elected Member 1931

M. O. Heckard, M.D., Chicago, Ill., Elected Member 1907, Fellow 1922

C. St. Clair Drake, M.D., Jacksonville, Ill., Elected Member 1914

Francis C. Driscoll, A.B., Quincy, Mass., Elected Member 1934

Mrs. William L. Putnam, Boston, Mass., Elected Member 1915

VITAL STATISTICS DIRECTORY

THE first attempt, as far as we know, to compile a list of persons engaged in vital statistics work was undertaken this year by the Vital Statistics Section of the A.P.H.A. The Directory has been issued in mimeographed form and a copy has been sent to each member of the Vital Statistics Section.

It is believed that the directory will be useful as a source of reference in determining who's who in the field of vital statistics, and in stimulating and promoting professional coöperation and loyalty to the American Public Health Association.

The directory should help to bring opportunities for recognition and advancement, particularly in the case of junior members of departments.

We will gladly furnish a copy to any member or Fellow of the Association who would like one. A charge of 50¢ per copy will be made to individuals not affiliated with the American Public Health Association.

NEWS FROM THE FIELD

ROYAL SANITARY INSTITUTE HEALTH CONGRESS AT BOURNEMOUTH

SANDOR HORWITZ, M.D., representing the Department of Health of the State of Illinois and the American Public Health Association at the Health Congress at Bournemouth, July 15–20, reports an attendance there of 1,084 delegates representing 23 foreign governments and authorities, 38 dominion and colonial governments and authorities, and 624 local authorities and educational institutions in Great Britain. In addition, there were 200 members and associates of the Royal Sanitary Institute in attendance excluding those appointed as delegates. Associates of the Congress and holders of guest tickets numbered 164.

At the Congress, 45 addresses and papers were read at fifteen meetings covering preventive medicine, architecture, town planning and engineering, maternity, child welfare and school hygiene, veterinary hygiene, national health insurance, hygiene in industry.

Special courtesies were extended to overseas delegates and a luncheon in their honor was held at the Royal Bath Hotel on Tuesday, July 16.

NEW HEALTH GROUP CREATED

PRESIDENT ROOSEVELT has created an interdepartmental committee to coördinate health and related welfare activities of the government, in line with the new Social Security Act. Saying in a formal statement that "there is increasing necessity for better coördination of the health activities of the Federal Government," Mr. Roosevelt named Josephine Roche, Assistant Secretary of the Treasury in charge of the Public Health Service; Oscar Chapman, Assistant Secretary of the Interior; M. L. Wilson, Assistant Secretary of Agriculture, and Arthur J. Altmeyer, Second Assistant Secretary of Labor.

The President's statement read:

> In view of the passage and signing of the Social Security Bill there is increasing necessity for better coördination of the health activities of the Federal Government. I am, therefore, creating at this time an interdepartmental committee to give attention to this subject. As members of this committee I have appointed the following government officials: Josephine Roche, Assistant Secretary of the Treasury, chairman; Oscar Chapman, Assistant Secretary of the Interior; M. L. Wilson, Assistant Secretary of Agriculture, and A. J. Altmeyer, Second Assistant Secretary of Labor.
>
> I am directing this committee to include within the scope of its work not only health activities, but closely related welfare activities as well. As its immediate task I am instructing this committee to assume responsibility for the appointment of special committees to be composed of physicians and other technically trained persons within the government service to study and make recommendations concerning specific aspects of the government's health activities.
>
> I am confident that this procedure will facilitate the consummation of a series of appropriate coöperative agreements among the various departments of the government. I am also hopeful that in this way we can eventually bring about a complete coördination of the government's activities in the health field.

—*New York Times*, Aug. 16, 1935.

WHITE MICE FARM GIVEN GOVERNMENT

FORTY-FIVE acres of land in Maryland has been deeded to the U. S. Public Health Service by Mr. Luke Wilson, formerly of Evanston, Ill., for a white mice, rabbits and guinea pigs farm to facilitate research.

With the completion of some legal

formalities, it is stated that a $100,000 Federal fund is available for constructing the first building.

RADIUM RESEARCH IN SWEDEN

THE battle against cancer in Sweden, which has already been aided by the million dollar jubilee fund subscribed at the time of the King of Sweden's 75th birthday, will now be further stimulated by a donation of 350,000 kroner ($93,800) from a grateful patient at the Swedish Radium Home at Stockholm, the late Mrs. Maria Althainz. The income from the fund will be used for a professorship in radium therapy, the first holder of which will be Dr. Elis Berven, now chief physician at the Radium Home, founded by Dr. Gösta Forsell, the widely known radiologist.

Mrs. Althainz was successfully operated on at the Radium Home for a cancerous growth by Dr. Berven about six years ago. The cause of her death was not cancer.

The holder of the professorship should be free to devote his principal efforts to research, it is stipulated. The estate is to pay the inheritance taxes and the Swedish Government provide a pension. The Radium Home will be moved to new quarters at the Caroline Academy of Medicine in 1937, and there will be two divisions, one for medical radiology and one for radium therapy.

PHILADELPHIA CHILDREN IMMUNIZED

APPROXIMATELY nine thousand children under the age of 6 years were immunized against diphtheria in a campaign sponsored by the Philadelphia Department of Public Health in June.

In the last ten years the death rate from diphtheria in Philadelphia is said to have been reduced from 16.10 per hundred thousand of population to 1.09.

DR. GORDON TO STUDY SCARLET FEVER IN RUMANIA

JOHN E. GORDON, M.D., PH.D., of Detroit, member A.P.H.A., sailed September 21 from New York on an expedition to Rumania, where, in company with a staff of laboratory and field workers, he will undertake an extended study of scarlet fever.

For some months past Dr. Gordon has been working at the Rockefeller Institute for Medical Research in New York, studying special technics which may be applied to scarlet fever. Rumania has been chosen as the field for study because it lies in one of the very few portions of the world where scarlet fever still retains a high case fatality rate, deaths being in the vicinity of 10–20 per cent of the cases, in contrast to the average elsewhere of about 1 per cent.

It is significant that the health department of an American city thus reaches out to a remote part of the world for clues as to the cause of one of the more prevalent communicable diseases about which there has grown up much conflicting opinion and in which progress seems to have become arrested at a very incomplete level. It is understood that special attention will be centered on the cause of scarlet fever, with the possibility in mind that a parasite as yet undescribed may be discovered.

MISSISSIPPI ELECTS COUNTY OFFICERS

NEW County Health Officers in Mississippi are announced as follows:

W. S. Martin, Carthage, Leake County
William A. McMahen, Union, Newton County
Albert P. Alexander, Como, Panola County
George Lacey Biles, Sumner, Tallahatchie County
Homer B. Watkins, Noxapater, Winston County
Frank L. McGahey, Calhoun City, Calhoun County

SIR GEORGE NEWMAN HONORED

THE Medical Society of London presented the Fothergillian Gold Medal to Sir George Newman at its annual meeting, May 13.

Sir George, Honorary Fellow of the A.P.H.A., retired in March as Chief Officer of the British Ministry of Health and of the board of education. The medal is awarded by the Society every three years.

U. S. CHILDREN'S BUREAU DIVISION HEAD APPOINTED

THE appointment of Ethel C. Dunham, M.D., to be Director of the Division of Maternal and Child Health of the Children's Bureau, U. S. Department of Labor, was announced by Katharine F. Lenroot, Chief of the Bureau.

Dr. Dunham, who has been on the Bureau staff since 1927, had been acting director of the division since December, 1934, when she was transferred to Washington from the Bureau's New Haven Branch. In New Haven she was engaged in original research and investigation on the medical aspects of neonatal mortality and morbidity.

Dr. Dunham succeeds Dr. Martha M. Eliot, who was promoted last December to be Assistant Chief of the Children's Bureau.—*Clearance,* Aug., 1935.

ANNA MARIA RHODA ERDMANN

PROFESSOR RHODA ERDMANN, Cancer Research worker, died August 24, at the age of 64. She was head of the Berlin Cancer Research Institute, founded by donations from the United States. She was the first German woman, it is stated, to lead a university institute independently.

She was a Professor, on the medical faculty, at the University of Berlin since 1922, and was the author of scientific books and articles.

MISSOURI PUBLIC HEALTH ASSOCIATION MEETS

THE Missouri Public Health Association held its eleventh annual meeting in Kansas City, September 5–7.

Joseph F. Bredeck, M.D., D.P.H., Health Commissioner of St. Louis, member A.P.H.A., was inducted as President. Mrs. Elsbeth H. Vaughan, R.N., of St. Louis, F.A.P.H.A., was elected to represent the society on the Governing Council of the American Public Health Association. C. F. Adams, M.D., of Jefferson City, F.A.P.H.A., was reëlected Secretary.

The meeting was well attended and leading health workers in the state participated.

Some of the speakers from outside the state were Dr. William DeKleine, of the American National Red Cross, Washington, D. C., F.A.P.H.A.; Eva F. MacDougall, R.N., of the Indiana State Division of Public Health, F.A.P.H.A.; Dr. Caroline Hedger, of the Elizabeth McCormick Memorial Fund; and Reginald M. Atwater, M.D., Executive Secretary of the American Public Health Association.

The 1936 Annual Meeting of the society will be held in Columbia, Mo.

AIR CONDITIONING SHOW

THE Fourth International Heating and Ventilating Exposition, which is to be held January 27–31, 1936, in the International Amphitheatre in Chicago, Ill., is planned to be a pageant showing the advance of civilization in terms of the very air it breathes. Illustrated by means of the actual machines and processes in operation will be man's latest methods for the ultimate control of the weather in all seasons and climates.

The Exposition, which is held every two years, comes this year for the first time in Chicago. Previous expositions were held in Philadelphia, Cleveland, and New York.

NATIONAL ILLNESS SURVEY PLANNED

GEORGE ST. J. PERROTT, research associate of the Milbank Memorial Fund and statistician of the U. S. Public Health Service, will be the director of a national survey of chronic illness which is to be undertaken this fall with funds from the Works Progress Administration.

This health inventory is expected to yield information as to the extent to which ailments such as heart disease, rheumatism, diabetes, cancer, and digestive disturbances prevail in the United States, and the effect of such illnesses on economic and social conditions. The present study will later be correlated with data obtained previously by the Public Health Service in an intensive study of the importance and effect of chronic ailments on the capacity of the patient and family to remain self-supporting.

It is planned to obtain some of the necessary information from the records of hospitals and sick-benefit associations, and also to make a house-to-house canvass of 750,000 families in 19 states, selected as representative of the general population of various income levels. Besides chronic illness, data will be collected on physical disabilities, such as blindness, deafness, loss of limbs, or other crippling handicaps. In addition, an inventory will be made of the medical and nursing facilities available throughout the country, and information gathered as to the extent to which the canvassed population availed themselves of the existing public health and medical services.

The states to be included in the inventory are: Washington, Oregon, California, Utah, Minnesota, Missouri, Illinois, Michigan, Ohio, Pennsylvania, Maryland, Virginia, New York, New Jersey, Massachusetts, Georgia, Alabama, Louisiana, and Texas.—*News Digest of the Milbank Memorial Fund*, Sept., 1935.

WEIGHT REDUCER CAUSES BLINDNESS

BLINDNESS from the use of dinitrophenol for reducing weight has not stopped the use of the drug in spite of warning, says W. G. Campbell, Chief of the Federal Food and Drug Administration.

The eye cataracts observed in dinitrophenol poisoning develop with a rapidity and malignancy hitherto unknown, and result in total blindness within a comparatively short time. This drug may produce acute poisoning, followed by death.

The Food and Drugs Act, according to Mr. Campbell, is practically inoperative against this public health hazard. He says, "The only application of the law to these products is through some misstatement of fact or some false and fraudulent curative claim in the labeling. In any event, the law can be invoked only when the product has been transported across a state line."

TEXAS ASSOCIATION TO MEET

THE Texas Public Health Association will hold its Thirteenth Annual Meeting in Waco, Tex., October 16–18, at the Roosevelt Hotel.

Dr. B. E. Pickett, President of the association, plans what he hopes will be a worthwhile program.

WESTCHESTER HEALTH ASSOCIATION INCORPORATED

INCORPORATION of the Westchester Tuberculosis and Public Health Association—at White Plains, N. Y.—was announced on September 14, "to facilitate the building up of relief funds of the organization."

James A. Tobey, Dr.P.H., of Rye, N. Y., F.A.P.H.A., who previously headed the association, has been elected President of the Corporation. Mrs. Susan W. Baker is Executive Secretary; and Edward M. Ames and James E. Bryan are Treasurer and Secretary respectively.

PERSONALS

OWEN E. PUCKETT, M.D., of Carlsbad, N. M., member A.P.H.A., has been appointed Health Officer of a district made up of Eddy, Lea, and Chaves Counties, N. M.

MICHAEL M. DAVIS, M.D., Director of Medical Services for the Julius Rosenwald Fund, Chicago, Ill., F.A.P.H.A., received the award of the Squires Prize for original investigation in the field of sociology. The award is made once every five years by Columbia University.

DR. FRANCIS W. HEAGEY, of Omaha, was elected President of the Nebraska Tuberculosis Association at the recent annual meeting.

DR. GAIL E. MILLER, of Lima, has been named Health Officer of Allen County, Ohio, on a part-time basis, to succeed Dr. John J. Sutter, member A.P.H.A., who served 16 years as full-time Health Officer.

DR. THOMAS E. GIBSON, of Mount Pleasant, Mich., has been appointed Health Officer of Genesee County, succeeding Leslie A. Lambert, M.D., of Flint, member A.P.H.A., resigned.

HAROLD JACKSON DAVIS, M.D., Assistant Director of Local Health Administration of the New York State Department of Health, Albany, N. Y., has been assigned as part-time consultant in medical care to the Works Progress Administration. Dr. Davis is a Fellow of the A.P.H.A.

HALBERT LOUIS DUNN, M.D., of Minneapolis, Minn., member A.P.H.A., has been appointed to the post of Chief Statistician in the Division of Vital Statistics of the U. S. Department of Commerce at Washington, D. C.

ALFRED D. GREGG, M.D., of Liberty, N. C., member A.P.H.A., has been appointed Health Officer of Edgecombe County, to succeed Dr. Rembert E. Broadway, of Tarboro, resigned. Dr. George H. Sumner, of Asheboro, member A.P.H.A., has been appointed Health Officer of Randolph County, to succeed Dr. Gregg.

LESLIE T. WEBSTER, M.D., of the staff of the Rockefeller Institute for Medical Research, New York, member A.P.H.A., has recently received a prize of 1,000 Swiss francs awarded by the medical faculty of the University of Berne, Switzerland, in recognition of his work on encephalitis.

DR. PHILIP S. JOSEPH, of Alice, Tex., has been appointed Health Officer of Jim Wells County, to succeed the late Dr. John S. Strickland.

DR. BERNARD W. PATTON, of Lebanon, Tenn., was recently made Health Officer of Wilson County, to succeed William D. Cagle, M.D., member A.P.H.A.

DR. J. WILL PAYNE, of Willowwood, has been appointed Health Officer of Lawrence County, Ohio.

DR. CLAY E. COBURN, of Kansas City, was elected President of the Kansas State Board of Health, at Topeka, Kans., recently.

DR. MURRAY C. EDDY, of Hays, has been named Health Officer of Ellis County, Kans.

DR. KENNETH H. COLLINS, of Craigmont, has been appointed physician and Health Officer of Lewis County, Idaho, succeeding Dr. Eli Taylor, resigned.

DR. FLOYD R. TOWN resigned recently as Health Officer of Jackson, Mich., after 16 years' service to become Health Commissioner of Isabella County.

DR. EDWARD A. SCHILZ, of Grand Ledge, Mich., has been appointed a member of the Michigan State Council of Health, to succeed Dr. William E. McNamara, of Lansing; and U. G. Rickert, D.D.S., of Ann Arbor, will succeed the late Chalmers J. Lyons, D.D.S.

DR. JESSE LYNN MAHAFFEY, of Haddonfield, N. J., was reëlected Director of the New Jersey State Department of Health for four years. Dr. Irvin E. Deibert, of Camden, was elected President.

DR. CLARENCE H. WHITE, of Kenansville, N. C., has been named District Health Officer, with jurisdiction over the health boards of Avery, Yancey, and Watauga Counties.

CONFERENCES

Sept. 30–Oct. 4, American Hospital Association, St. Louis, Mo.

Sept. 30–Oct. 4, 21st National Recreation Congress, sponsored by the National Recreation Association, Chicago, Ill.

Oct. 3–5, Association of Military Surgeons of the United States, New York, N. Y.

Oct. 4, 5, Joint Meeting of the New England and New York State Sewage Works Associations, Schenectady, N. Y.

Oct. 5, Round Table Conference of State Supervising Nurses, Milwaukee, Wis.

Oct. 5–7, Conference of State Sanitary Engineers, Milwaukee, Wis.

Oct. 7–10, Sixty-fourth Annual Meeting of the American Public Health Association, Milwaukee, Wis. Headquarters: Hotel Schroeder.

Oct. 7–10, Annual Meeting of the American Association of School Physicians, Milwaukee, Wis.

Oct. 7–10, Meeting of the American Association of State Registration Executives, Milwaukee, Wis.

Oct. 7–10, Meeting of the International Society of Medical Health Officers, Milwaukee, Wis.

Oct. 7–10, State Laboratory Directors Conference, Milwaukee, Wis.

Oct. 7–10, Conference of Wisconsin Health Officers, Milwaukee, Wis.

Oct. 8–11, Meeting of the Association of Dairy, Food and Drug Officials, Milwaukee, Wis.

Oct. 10–11, Meeting of the International Association of Dairy and Milk Inspectors, Milwaukee, Wis.

Oct. 12–19, Seventh Pan American Child Congress, Mexico City.

Oct. 14–18, 24th Annual Safety Congress, National Safety Council, Inc., Louisville, Ky.

Oct. 28–31, 18th Annual Meeting, American Dietetic Association, Cleveland, O.

Nov. 1, Mid-Year Meeting of the New York State Association of Public Health Laboratories, at the State Laboratory, Albany, N. Y.

Nov. 1, First Session of the Society of Illinois Bacteriologists, Chicago, Ill.

Nov. 1, 2, School Health Conference, sponsored by the Department of School Health and Physical Education of the National Education Association, Philadelphia, Pa.

Nov. 15, 16, Sixty-first Annual Meeting, New Jersey Health and Sanitary Association, Hotel Berkeley-Carteret, Asbury Park, N. J.

Nov. 19, 20, Annual Meeting of the Southern Branch, American Public Health Association, St. Louis, Mo.

Dec. 30–Jan. 4, 1936, Winter Meeting of the American Association for the Advancement of Science and Associated Societies, St. Louis, Mo.

Jan. 27–31, 1936, Fourth International Heating and Ventilating Exposition, Chicago, Ill.

Apr. 22–25, 1936, National Tuberculosis Association, New Orleans, La.

May 11–15, 1936, American Medical Association Convention, Kansas City, Mo.

July 27–31, 1936, Second International Congress on Mental Hygiene, Paris.

Sept. 8–10, 1936, International Union Against Tuberculosis, Lisbon, Portugal.